

# FLIGHT

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AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

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## Flight

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### CONTENTS

Editorial Comment :	PAGE
Pioneers .. .. .	413
World's Records .. .. .	414
Birthday Honours .. .. .	414
Loening Cabin Amphibian .. .. .	415
Honouring a Pioneer .. .. .	417
Sir Alan Cobham's Return .. .. .	419
The Pacific Flight .. .. .	419
"The Art of Flying" (Review) .. .. .	420
Private Flying .. .. .	421
The Norfolk and Norwich Club Display .. .. .	422
Lieutenant Bentley's Lecture .. .. .	423
The Birmingham Pageant .. .. .	424
The Light 'Plane Clubs .. .. .	425
Wilbur Wright Memorial Lecture .. .. .	427
Airisms From the Four Winds .. .. .	429
Royal Air Force .. .. .	430
Correspondence .. .. .	430

### "FLIGHT" PHOTOGRAPHS

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2.

**DIARY OF CURRENT AND FORTHCOMING EVENTS**  
Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1928

May 24—

June 9 Royal Tournament, Olympia

June 3-9 R.A.F. Rifle Association Prize Meeting

June 7 .... 7th Annual Middle East Dinner

June 8 .... Banquet to Mr. A. V. Roe at Savoy Hotel

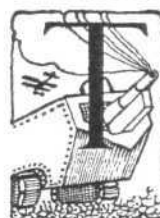
June 9 .... Light 'Plane Meeting, Castle Bromwich

June 9-10 Aero Golfing Soc.—Team Match v. R.A.F.

June 20 .... Aero Golfing Soc.—Team Match v. Porters  
Park G.C.

June 26-29 F.A.I. Annual Conference, Brussels

## EDITORIAL COMMENT



TRULY this is a period of pioneering. Last week Mr. Handley Page, himself one of the British aviation pioneers, gave the Wilbur Wright Memorial Lecture before the R.Ae.S. and I.Ae.E., which lecture commemorates two other pioneers, the Wright Brothers. This week the British aviation community is honouring yet another pioneer, Mr. A. V. Roe, whose early work was of such a nature as to leave traces to this day, for was he not the first to produce, at any rate in this country, the tractor type of aeroplane?

### Pioneers

In a few days' time will arrive in this country Captain Wilkins, who crossed the Arctic Wastes from Alaska to Spitzbergen by air, the first to do so in that direction and thus yet another British pioneer. The flight of R.A.F. Supermarine "Southampton-Napier" flying-boats has reached Australian waters after a cruise carried out to schedule from England to Singapore and more recently onwards to Australia, thereby nearing the completion of a pioneering enterprise that may well in years to come prove the beginning of a new era in the history of the British Empire. Last week also Sir Alan J. Cobham returned to home waters in his Short "Singapore-Condor," on which he, with his wife, has "circumnavigated" the African continent, a feat never hitherto accomplished. More pioneering. Lieutenant Bentley, of the South African Air Force, is but recently returned to England after having flown from London to Cape Town and then, with his wife, back in the same "Moth" with the same 80 h.p. "Cirrus" engine, thus proving the capabilities of the British light 'plane and its low-power engine. Truly a great pioneering effort. Finally His Royal Highness the Prince of Wales is by way of doing pioneer work by his recent decision to make use of an aeroplane for keeping some of his numerous appointments. It should be realised that in doing so he is breaking new ground and setting an example which may well have a very far-reaching effect on the private use of the aeroplane by people in prominent positions. Another Britisher, Capt. Kingsford

Smith is pioneering in the Pacific by his attempt to fly from California to Australia, and at the time of writing has reached the Fiji Islands.

Altogether it is doubtful whether, in the history of British aviation, a similar period has seen so much pioneering being done, and it may well be that at some future date, when looking back, 1928 may be seen to mark the beginning of aviation really coming into its own. We who live in the midst of all these great happenings should be very careful not to fail in our realisation and appreciation of the importance of what we are witnessing. And let us pay tribute to our pioneers. Do not let us leave it to future generations to do so. Aviation provides a unique opportunity in that, in spite of all that has already been achieved, the art is still young enough for the first men who flew, Orville Wright, the Farman brothers, Bleriot, A. V. Roe, Moore-Brabazon, to mention but a few, to be still among us, and what is even better, to be still taking a keen and practical interest in all aviation progress, and indeed to be still contributing to that progress. All honour to our British pioneers.



**World's Records** The establishment of a new world's record for duration, increasing to more than 58½ hours the time in the air without alighting, and without refuelling, by the Italian pilot Lieutenant Ferrarin on a Savoia monoplane fitted with Fiat engine, is an accomplishment which will add further to the prestige of Italian aviation, and is yet another demonstration of what a determined aviation policy, such as that pursued

by Signor Mussolini, can achieve. British aviation will extend to Italy the most sincere congratulations, not only on this particular feat but on the way in which, during the last year or so, Italian aviation has forged ahead and is now rapidly attaining a leading position in the world of aviation. For us in this country the admiration with which we regard Italy's efforts in the air must inevitably be associated with the reflection that for each new record which falls to an Italian machine, Great Britain's task becomes increasingly difficult. As we remarked many months ago, if Great Britain had, instead of wasting precious weeks by sending the Schneider trophy machines home on board a slow vessel, let one of them go for the speed record at Venice, there is little doubt that it would have been attained. For years we have been claiming that we have machines capable of beating the duration record, but not until relatively recently have we set to work in earnest to produce a machine specially designed for the purpose. The new Italian record will not render our task any easier. The chances of beating the Italian speed record are—we may as well admit it—not nearly as good as they were, and from the way we are setting about it, it looks as if our defence of the Schneider Trophy next year may well be totally inadequate. Truly, in matters of outstanding performances such as records, we have little to be proud of. It seems high time someone emulated the example of Mr. Grahame-White of the years before the war, when he used to fly a machine on which were painted in large letters the words "Wake up England!"

## BIRTHDAY HONOURS

THE official list of honours conferred by His Majesty the King on the occasion of his sixty-third birthday on June 3, includes the following:—

### Knights

Capt. George Hubert Wilkins, M.C. Australian aviator and explorer, who recently flew over the North Pole.

### Order of the Bath

*K.C.B. (Military Division)*

Air Vice-Marshal Sir John Frederick Andrews Higgins, K.B.E., C.B., D.S.O., A.F.C., Royal Air Force.

*C.B. (Military Division)*

Air Commodore Edgar Rainey Ludlow-Hewitt, C.M.G., D.S.O., M.C., Royal Air Force.

*C.B. (Civil Division)*

James Stirling Ross, Esq., C.B.E., Director of Accounts, Air Ministry.

### Order of the British Empire

*(Military Division)*

*C.B.E.*

Group-Capt. George Laing, O.B.E., Royal Air Force.

*O.B.E.*

Sqdn.-Ldr. Alan FitzRoy Somerset-Leeke, Royal Air Force.

Lieut.-Col. Henry Tudsbery, M.C., M.Inst.C.E., Essex Group, Anti-Aircraft Searchlight Companies, Royal Engineers, Territorial Army.

Miss Christine Cameron, R.R.C., Matron, Princess Mary's Royal Air Force Nursing Service.

### Sir Frederick Sykes

It is officially announced that Sir Frederick Sykes has been approved by the King as the next Governor of Bombay. Sir Frederick Sykes raised and commanded for two years the Military Wing of the R.F.C.; commanded the R.A.F.

The Rev. Maurice Henry Edwards, B.A., Chaplain, Royal Air Force.

*M.B.E.*

Flight-Lieut. Hugh Nelson, Royal Air Force.

Company Sergt.-Major Albert Murray Humphreys, M.M., 26th (London) Anti-Aircraft Battalion (London Electrical Engineers), Royal Engineers Territorial Army.

1734 Sergt.-Major 1st Class Reginald Arthur Howes, Royal Air Force.

206950 Sergt.-Major 2nd Class Herbert William Smith, Royal Air Force.

*(Civil Division)*

*O.B.E.*

Reginald Stagg, Esq., Headquarters Supervisor of Home Areas, Navy, Army, and Air Force Institutes.

Maj. William Sansome Tucker, D.Sc., Director of Acoustics at the Air Defence Experimental Establishment, War Office.

Ronald McKinnon Wood, Esq., M.B.E., Principal Scientific Officer, Royal Aircraft Establishment, Farnborough.

*M.B.E.*

Walter Cecil Fenwick, Esq., Contract Officer, Air Ministry.

Robert William Strugnell, Esq., Assistant and Civil Engineer, Works and Building Department, Air Ministry.

### Air Force Cross

Flight-Lieut. Thomas Stanley Horry, D.F.C.

Flight-Lieut. Robert Lyle McKindrick Barbour, D.F.C.

Flight-Lieut. David D'Arcy Alexander Greig, D.F.C.

### Air Force Medal

187186 Flight-Sergt. (Pilot) Harry Walter Woods.

341882 Leading Aircraftman Francis Thomas Arney.

in France, and also the Naval Wing of the R.F.C. in the Eastern Mediterranean during the war. He was then Chief of the Air Staff, Chief of the British Air Section at the Peace Conference, and Controller-General of Civil Aviation from 1919-1922.

## THE LOENING CABIN AMPHIBIAN

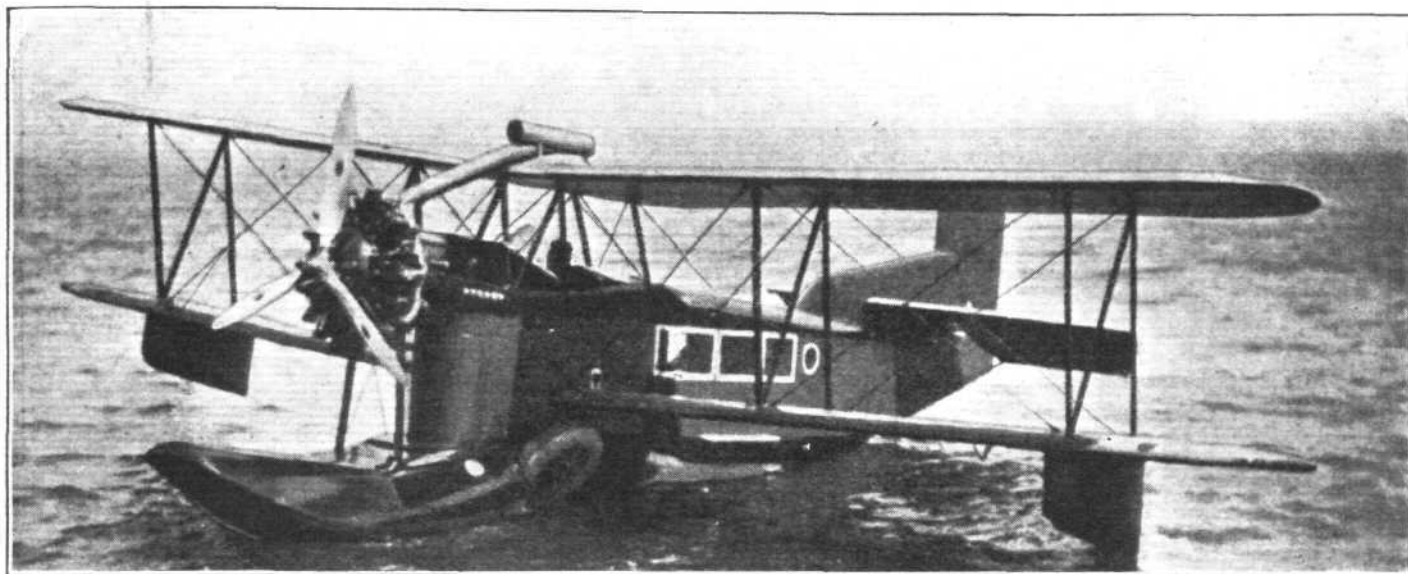
IN our issue for December 22, 1927, we published a detailed description, with illustrations and general arrangement drawings, of the Loening OL-8 amphibian, a successful U.S. Service machine of somewhat original design produced by Grover Loening—one of the pioneer designers of America. This week we are able to give some particulars of an interesting development of this machine for commercial purposes—we believe the first serious effort by the Loening Aeronautical Corp. of New York at a non-service type.

The Loening Cabin Amphibian, with 425 h.p. Pratt and Whitney "Wasp" engine, is developed directly from the

carpet, suggesting the interior of a high-class club car with extreme simplicity and refinement, and yet with no wilful waste in weight or sacrifice of easy access for serviceability.

The Pratt and Whitney "Wasp" engine, mounted at the nose with exactly the same installation as the OL-8, drives a 9-ft. three-bladed standard steel airscrew, and is installed with all of the latest equipment, such as automatic fire extinguisher, oil strainer, electric inertia starter, and generator.

The silencer employed on this machine is another item of equipment of great importance. A very large size manifold, giving ample expansion space for the gases, collects the



**THE LOENING CABIN AMPHIBIAN:** Three-quarter front view of the machine on the water. It is the commercial development of the Loening OL-8.

standard service OL-8 type referred to above, the only material change being the modification for the cabin at the rear of the wings, seating four to six passengers and including a small lavatory. This cabin is fitted up with swivel armchairs, electric lights, Triplex windows, baggage compartments, magazine and buffet racks, and smoking equipment, in a character equal to that obtaining in the finest motor car or motor boat.

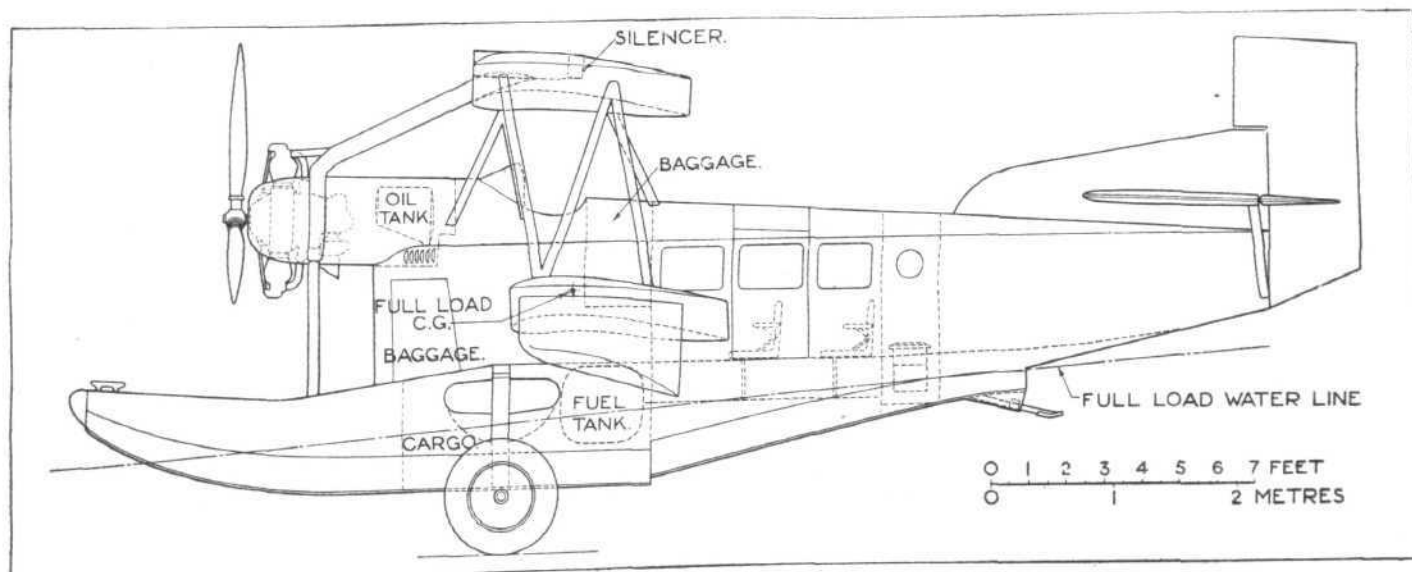
One of the most interesting features of the cabin arrangement is that, owing to the widening out back of the pilot's cockpit, there is obtained a direct forward visibility for the passengers despite the fact that the plane is of the normal tractor biplane type. This cabin is over 6 ft. long by 4 ft. wide, and has a 60-in. head room, thus affording ample space in which to walk about. It is beautifully upholstered in natural saddle leather trimming, with buff cloth and buff

exhaust and carries it over the top wing, where it is delivered to the Venturi type muffler, which has been specially developed by the Loening engineers. It consists of a large single expansion and whirling chamber instead of the smaller ones on each side, which have been experimented with heretofore.

The pilot's cockpit, located immediately behind the engine and in front of the lower wings, provides particularly good visibility for landing and operating on the water, and is situated in a handy way for all servicing operations, such as fuelling-up, anchoring, mooring, etc.

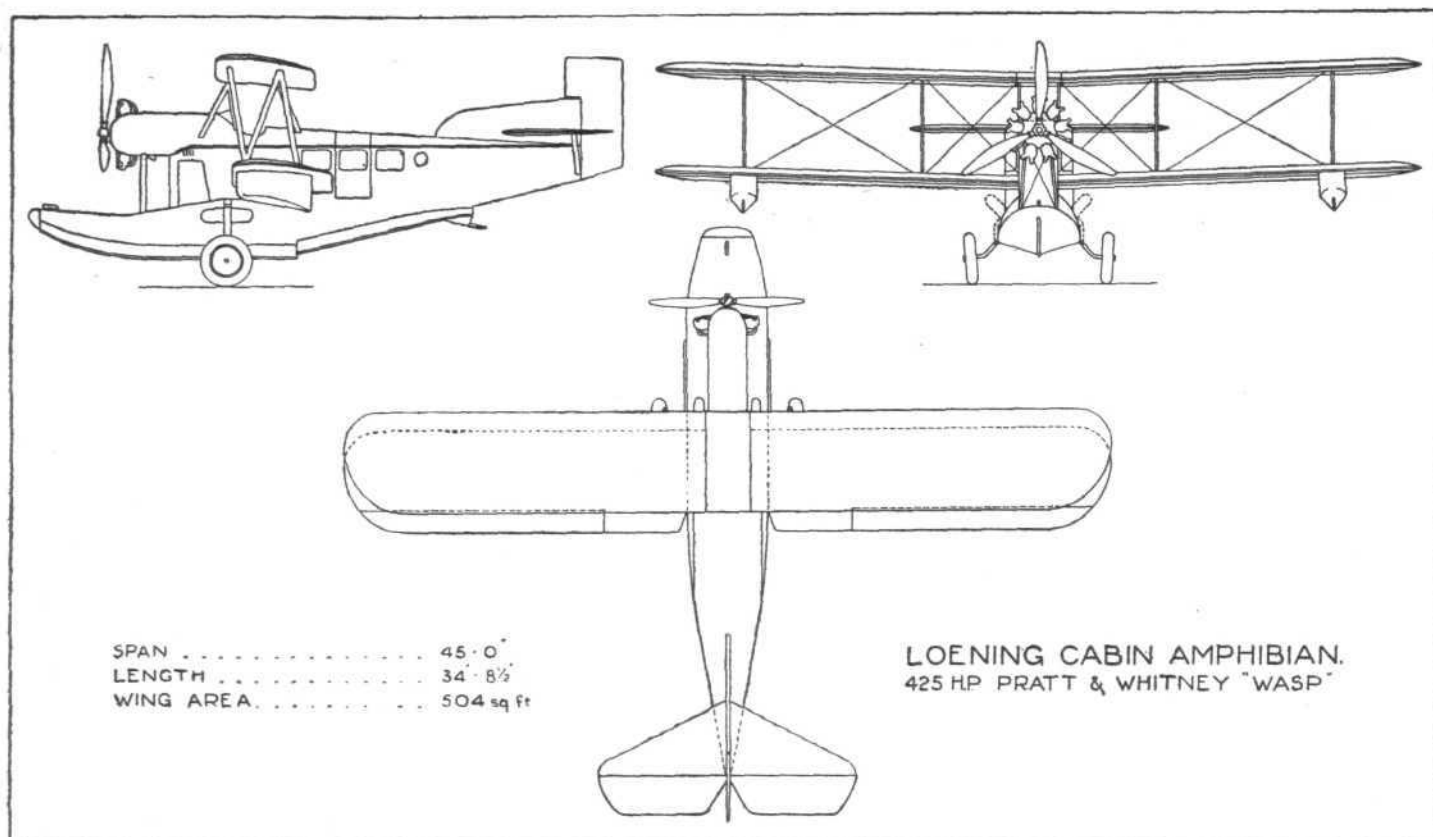
Just behind the pilot's seat is a window which may be opened and thus permit of direct communication with the cabin during flight, although the pilot's compartment—following what is now accepted as the best practice—is made entirely independent of the cabin.

The wing structure of this cabin machine is of normal



**THE LOENING CABIN AMPHIBIAN:** Side elevation, showing in greater detail the general layout of the hull and cabin.





**THE LOENING CABIN AMPHIBIAN: General arrangement drawings.**

staggered biplane type, 45 ft. span, 6 ft. chord, and 500 sq. ft. in area. As in all Loening amphibians, the spars are of wood and the ribs are of metal, specially treated for preservation against corrosion. The wing-section employed is the Loening 10A, which has proved by tests to be extremely efficient for a thin wing section, very stable and with exceptional lateral control characteristics.

An adjustable stabiliser, controlled by a wheel in the pilot's cockpit, is provided, as in the OL-8. The ailerons, which are unbalanced, are fitted on the lower planes only.

The main petrol tank is carried in the hull and equipped with a reserve capacity. The tank is readily removable through the side of the hull by a specially constructed side plate in the hull that may be taken on and off with ease. Another one of the features of this machine that has been proved out by long use in service, and many thousands of miles of flying with previous Loenings, is the petrol system. In this the engine pump draws the petrol direct from the main tank, but, in addition, there is provided a hand wobble pump readily operated by the pilot which can be used in case of emergency. No gravity tank is used, and no complications introduced into the system, as it has been found that this dual petrol pump system is by far the most reliable, the easiest to maintain, and the most foolproof. A hydrostatic petrol gauge is provided on the dashboard.

The landing gear is equipped with large 36-in. wheels, and 8-in. tyres, which, for a plane of this light weight, gives ample excess oversize for operation in the muddiest of fields. Wheel brakes may be mounted, if desired, although the action of the resistance of the hull itself in landing has been found to slow up the run of the machine so as to permit landings to be made in very small fields. The operation of this landing gear and its design is exactly the same as has been developed—with considerable success—in the OL-8 and other models.

Similarly, the tail skid is a simple, sturdy construction that has gone through extensive service development, and consists of a heavy steel tube pivoted at the front, with rubber disc shock absorber unit at the centre and housed in a reinforced shell, which, itself, can take the entire tail load at the rear. It may be pointed out that the tail skid forms one of the most difficult problems in an amphibian, but this has been very satisfactorily solved and tested out in the new Loening amphibians.

As regards other constructional details of the Loening Cabin Amphibian, we would refer our readers to our description of the OL-8 model previously mentioned. It will suffice for the present if we outline, in conclusion, the salient features of this original type of amphibian. From the very inception

of its development (some four years ago) the Loening unit hull type—an ingenious combination of flying-boat hull and normal tractor-fuselage—has always been an amphibian, logical in its design, convenient and efficient in its layout.

As a land plane it is sturdy, can be used continuously from inland fields of even small and rough character. The take-off with the air-cooled engine is quick, and the wing loading is light. In actual practice with this type of machine it has been found that there is ample ground clearance of the keel; in fact, the keel itself is sufficiently reinforced to enable landings being made with the wheels up without injury to the plane. As a land plane, in other words, the Loening claims equal advantages and efficiency to the normal tractor-fuselage type of machine.

Then, as a seaplane, the Loening has proved equally satisfactory, even under the most difficult conditions. The hull has been made very strong and serviceable, with its special composite wood and metal-covered construction, and with the watertight nose there is little possibility of shipping water in breaking seas, as in the pusher-type flying-boat. The airscrew in front rises well clear of the water when under way, and is far ahead of the spray, as well as being protected by the hull beneath it.

This tractor arrangement has been found to be, in actual practice, a desirable one in every way, comparing very favourably with pusher-type flying-boats. Mooring the Loening prevents little difficulty; upon coming to a mooring the forward position of the pilot enables him to pick up a line, either from his seat or from the lower wing, and with the airscrew still running this line is recessed to a side chock. As soon as the engine is stopped this line can, if desired, be transferred to the bow. With the line at the side chocks the pilot is able to start his engine and warm it up before casting off, and can cast off the line or raise his anchor without difficulty with the engine running.

Passengers can be taken aboard at the bow—with the airscrew at rest—and have access to the cabin with steps that are provided, in quite as easy a manner as any other type of machine.

As regards airworthiness, the Loening amphibian is stable in rough air, handy and normal on all controls, and easy to land and taxi. Its performance is 120 m.p.h. high speed, 14,000 ft. ceiling, and 50 m.p.h. landing speed, with a complete fuel load of 140 gals. of petrol and 12 gals. of oil, pilot and marine equipment and 1,200 lbs. of pay load. This is considerably higher than is generally carried on "Wasp" engined seaplanes, but makes the total weight of the plane in the air only 5,800 lbs., which is within the total weight limit of full loads that have been carried with entire success on

the service types of Loening amphibians with the same horse-power.

The principal characteristics of the Loening cabin amphibian are:—

Span .. .. .	45 ft.
O.A. length .. .. .	34 ft. 8½ in.
Height (wheels down) .. .. .	13 ft. 2 in.
Chord .. .. .	6 ft.
Gap .. .. .	5 ft. 11¼ in.
Stagger .. .. .	1 ft.
Dihedral .. .. .	2¼ deg.
Incidence .. .. .	3 deg.
Area of main planes .. .. .	504 sq. ft.
" ailerons .. .. .	30 "
" tail plane .. .. .	39.2 "
" elevators .. .. .	28 "

Aera fin .. .. .	15.8 sq. ft.
" rudder .. .. .	17.4 "
Weight empty .. .. .	3,543 lbs.
" loaded .. .. .	5,900 "
Pay load .. .. .	1,200 "
Weight per h.p. .. .. .	13.9 "
" per sq. ft. .. .. .	11.75 "
Speed range .. .. .	50—120 m.p.h.
Ceiling .. .. .	14,000 ft.

#### Everling Quantities

High Speed Figure  $\frac{\eta}{2K_D} = 14.2$ .

Distance Figure  $\eta_D^L = 4.7$ .

Altitude Figure  $\eta_D^L \sqrt{2K_L} = 6$ .

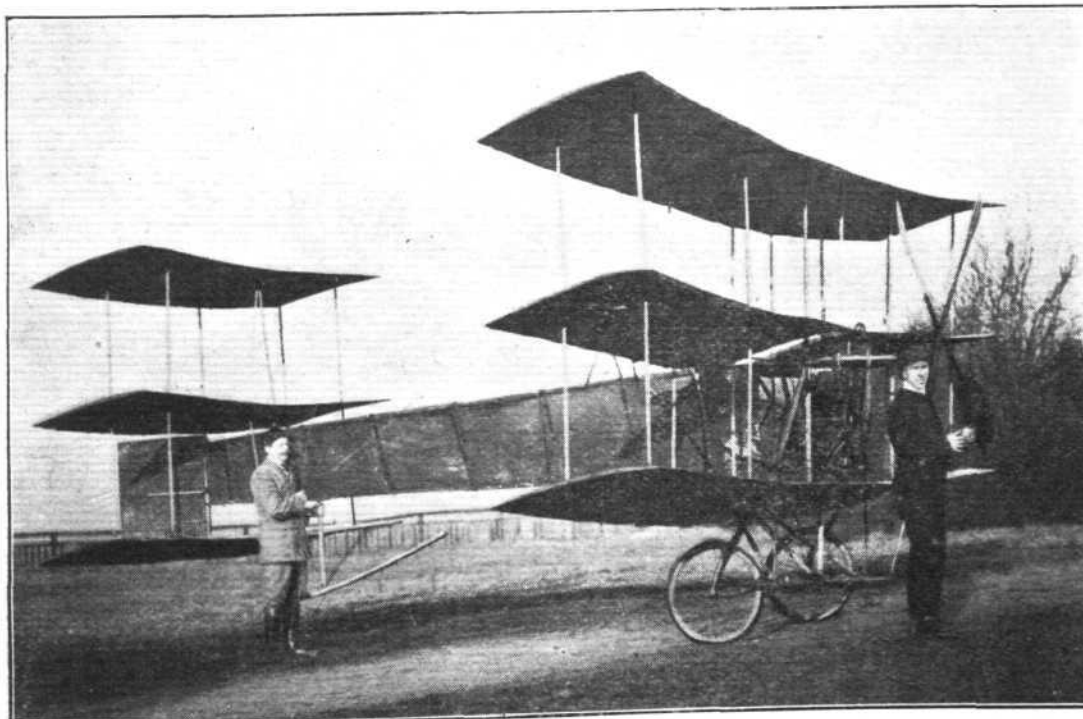
## THE FIRST BRITISH AIRMAN

By LIEUT.-COL. W. LOCKWOOD MARSH

THE Air League, Royal Aeronautical Society, Royal Aero Club, and Society of British Aircraft Constructors are combining to do honour to an English pioneer of flying by giving a banquet in his honour at the Savoy Hotel to-morrow, June 8. It is appropriate that this should take place this year, for it is just 21 years since Alliott Verdon Roe won his first prize in connection with flying. The *Daily Mail* offered three prizes—to the amount of £150, £75, and £25 respectively—for model aeroplanes shown at the Aero Club Exhibition held at the Royal Agricultural Hall, Islington, from April 6 to 13, 1907. At the show A. V. Roe produced five models, all driven by twisted rubber. Four of these were biplanes, while the fifth was a Langley-type "tandem" monoplane. The models entered for the competition were subsequently, on April 15, tested in flight at the Alexandra Palace. The competition was in two parts, the first being held in the central hall of the Palace and the other in the open air in the grounds. By the rules the judges, in awarding the prizes, were to take into consideration: "length of flight, practicability, stability, steering power (horizontal or vertical), speed, excellence of design, excellence of construction, method of commencing flight, available lifting power." Roe's No. 3 model in the indoor tests covered the longest distance (85 ft.) "in a beautifully even flight." Out of doors it did not do so well, being only fourth with a flight of 50 ft. None the less, he was awarded the second prize of £75, the first prize not being given, as in the opinion of the judges none of the models justified an award. The model to which the prize was given was a biplane with wings measuring 9 ft. by 15 in. with a 2-ft. propeller behind. At each end of the top plane

was an auxiliary balancing plane carried on outriggers trailing behind the main planes.

In the autumn of 1907 Roe rented a shed at Brooklands, where he built a pusher biplane, on similar lines to the successful model with a front elevator and side curtains on Voisin lines but no rudder or lateral control. While awaiting delivery of a 24-h.p. Antoinette motor from France he experimented in gliding flights in tow behind a motor-car. In the following spring the expected motor arrived, and on June 8, 1908, he made the first flight ever made in England, covering about 60 yards at a height of 2 ft. from the ground. The Brooklands authorities then gave him notice to quit, and after a search he found new quarters at Lea Marshes, where he rented and boarded-in two railway arches to form a workshop. In the intervening period he had constructed a triplane in the stable of his brother's house at Putney. He had had to sell the Antoinette motor, so was compelled to install in the triplane a "J.A.P." motor-cycle engine of only 9 h.p. designed by John Alfred Prestwick. With this, the lowest-powered machine that had ever flown, he succeeded in making a short flight on June 9, 1909, and on July 23, in the same year, covered 300 yards. Each of the three superposed planes measured 20 ft. by 3 ft. 7 in., the triplane tail planes measuring 10 ft. by 3 ft. 7 in. also. The total length was 23 ft., and the area about 320 sq. ft. The machine itself weighed 250 lbs., and the pilot 150 lbs., so that the engine was carrying not less than 40 lbs. per horse-power, while the wing loading was about 1½ lb. per square foot. No elevator was fitted, but instead the angle of the main planes could be altered. Steering was effected by warping the



Pioneer Work!  
This early Avro triplane had variable incidence wings, but in almost every other respect all the features of a modern tractor aeroplane were incorporated

["FLIGHT" Photograph]

extremities of the main planes in conjunction with a rudder behind the tail planes. This triplane, christened the "Bull's-eye," is now preserved in the aeronautical section of the Science Museum at South Kensington. Roe's biplane of 1908 and triplane of 1909 were the first tractor machines, with the airscrew in front and a fuselage in which the pilot sat connecting the main planes and tail, in the world to be built and flown. Although they were of primitive construction—the triplane was built mainly of planed deal and piano wire, the planes being covered with oiled cotton packing paper backed with muslin—they were, therefore, more nearly approaching to modern aeronautical practice than any of their contemporaries.

In July, 1909, A. V. Roe gained, with his triplane design, second place in a design competition organised by the journal *Aeronautics*, in connection with the aeronautical section of the Travel, Sport and Pastime Exhibition, which was opened at Olympia, on July 6, by Lieutenant (late Sir Ernest) Shackleton. In October of the same year he took his triplane to the first British flying meeting at Blackpool, but only succeeded in making two short flights of 20 yards and, therefore, failed to qualify for the "All British" prize of £150 offered by the Blackpool Tower Company for the longest flight, exceeding a minimum of 100 yards, made by a British aviator piloting a British-made machine, which was not awarded.

In 1910, A. V., and his

brother H. V. Roe, entered into partnership and started an aeroplane factory at Browns-field Mills, Manchester, their birth-place, building two triplanes with a 35 h.p. Green and a 35 h.p. J.A.P. engine respectively. The latter was, unfortunately, destroyed by fire on the railway on its way to the second

Blackpool meeting, in July, 1910, but the Green-engined machine was hastily erected and flown at the meeting on August Bank Holiday. On July 26, 1910, A. V. Roe obtained his "ticket," No. 18, from the Royal Aero Club.

Early in 1911, the "Avro" biplane with a 35 h.p. Green engine and conventional controls, which may be considered to be the forerunner of the famous "504" type training machine, made its appearance, and in it Howard Pixton made a flight of an hour and a half at Brooklands, on April 17. This machine was entered for the "Circuit of Britain," which started from Brooklands on July 22, 1911, but failed to take off for the race.

One of the most famous "Avro" machines was the "totally enclosed" biplane, on the lines of a similarly-enclosed monoplane produced earlier in the year, which competed in the British Military Aeroplane Trials in 1912. The pilot's seat of this machine was completely enclosed in the deep fuselage with windows at the sides. In it Lieut. Parke experienced the first recorded "spin," which aroused much puzzled discussion at the time. This may be said to have been Roe's last "experiment," for thereafter he remained faithful to the tractor biplane—his first venture.

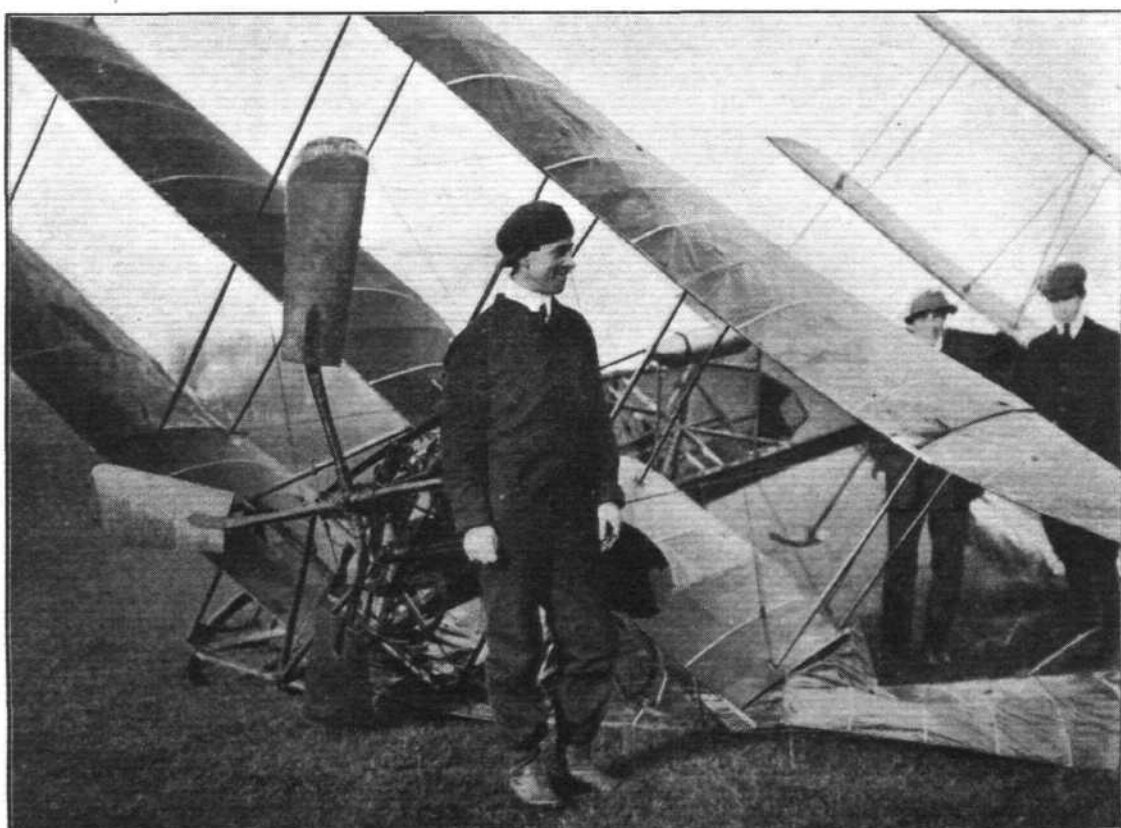


["FLIGHT" Photograph]

**A PIONEER:** Mr. A. V. Roe, the "father" of the tractor aeroplane, to whom a banquet is being given on June 8.

**Hard Work Ahead:** Mr. A. V. Roe standing in front of one of his early machines after a fairly typical landing. It is thought that the A.I.D. would not have passed the construction.

["FLIGHT" Photograph]





## AFRICAN SURVEY FLIGHT COMPLETED

WHEN the Short "Singapore" flying-boat, flown by Sir Alan Cobham, landed at Plymouth, on May 31 last, in the afternoon, after a final stage from Bordeaux via Brest and Guernsey, the African Survey Flight of 20,000 miles virtually finished. Air Vice-Marshal Sir Sefton Brancker greeted Sir Alan on behalf of the Air Ministry. The following day the flight was resumed up the English Channel with Sir Sefton Brancker on board, and a forced landing was made at Calshot, owing to the oil pressure getting low. Rochester was eventually reached on June 4 from Calshot, where the Short "Singapore" was inspected before the tour round England, under the auspices of the Air League of the British Empire, which started on June 5, with a flight to Hull. Unfortunately, Hull had prepared to receive Sir Alan last Friday, and had subsequently to cancel the arrangements owing to his delay.

Brief details of this survey are given here, and will be followed up by a full account in a later issue. It was officially termed the "Sir Charles Wakefield" Flight of Survey Round Africa, because Sir Charles Wakefield once again gave his generous support in the cause of Empire development through aviation. The machine was kindly loaned by the Air Council. It was fitted with two Rolls-Royce "Condors" (Series IIIA) of 700 h.p. each. Accompanying Sir Alan Cobham were his wife, Lady Cobham, Capt. H. V. Worrall, D.S.C., assistant pilot; Mr. F. Green and Mr. C. E. Conway, engineers; and Mr. S. R. Bonnett, cinematographer. Lady Cobham acted throughout the flight as secretary.

In summary, the work accomplished amounted to:—

(1) Final survey of the air route between Alexandria and Mwanza (Tanganyika), which will form the first section of the "through" air-service to Cape Town. (2) Completion of experimental flights from Khartoum to Mwanza for the Colonial Office, arranged by Cobham-Blackburn Air Lines,

Ltd., the new company formed to carry on work done in Africa by Sir Alan Cobham, Capt. Gladstone, and the parent organisations during the last three years. (3) East African Governors' Conference at Nairobi, at which support in a practical form for the proposed air service was promised. Similarly in Nyasaland, Northern and Southern Rhodesia, where Sir Alan Cobham met the Governments concerned. In South Africa, interest was stimulated afresh in the "through" air route, particularly for the carriage of gold from Johannesburg to London and the East. (4) An entirely new air route was prospected from Cape Town to Nigeria up the West Coast of Africa. (5) Enquiry carried out with the co-operation of the Governments concerned, for utilising aircraft to develop Nigeria, the Gold Coast, Sierra Leone, and Gambia. (6) Complete report on the behaviour of machine, engines and equipment under tropical conditions, with recommendation for the future. (7) Report with charts of nearly 50 flying-boat harbours and anchorages in Africa for the use of future air travellers, with notes on weather conditions encountered on the route. (8) Report on potential air traffic through Africa, divided into official, commercial and tourist passengers, goods, mails and gold. (9) A complete film has been taken, forming a vivid record of conditions and events en route, which will be of great value.

As well as Short Bros., of Rochester, who constructed the "Singapore," and Rolls-Royce, Ltd., designers of the "Condors," C. C. Wakefield & Co. Ltd. (Castrol Lubricating Oil), Shell-Mex, Ltd. (Shell Petrol), British Thomson-Houston Co., Ltd. (Magnetos), and Accles and Pollock, Ltd. (A and P tubes), played their successful part in the long cruise, above which, incidentally, Sir Alan Cobham did 3,000 miles' flying in Kenya, Northern and Southern Rhodesia in a D.H. "Moth." Photography and cinematography arrangements were by the Gaumont Co., Ltd.

## ACROSS THE PACIFIC BY AIR

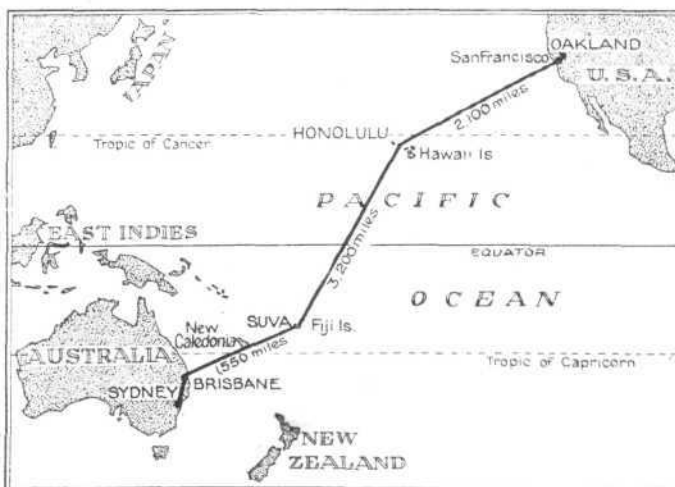
ONE of the most ambitious flights in the history of aviation was begun on May 31, when a three-engined Fokker monoplane named the "Southern Cross" left San Francisco for Sydney, Australia, about 7,000 miles away. The leader was Capt. Kingsford-Smith, and his crew were Mr. Charles Ulm, Mr. H. W. Lyon, navigator, and Mr. J. Warner, wireless operator. The former pair are Australians and the latter Americans. For a long time the flight had been contemplated by the leader, and the delay had drawn him under a fire of criticism, in which his own country participated. A few months ago he attempted an endurance record in America. A 2,100-mile flight over the Pacific to Honolulu was the first stage. Only four times had that distance been flown before, whilst many lost their lives in attempting it for the Dole prize last year. Good weather reigned at the start of the expedition at 9 a.m. and constant wireless communication kept observers informed of the progress. There was suspense at one period when, after an abrupt message stating, "Hit air pocket," there was silence for two hours during the night. Then came word that their position was approximately 1,300 miles from California. In the meantime, they had apparently lost the position, but the wireless operator managed to communicate with the U.S. destroyer *Richmond*, in spite of an exhausted battery. Before that they thought land was in sight, then it was found that clouds had created the delusion.

The S.S. *Milaka* sighted the machine when it was 1,450 miles from the coast. Seven machines were lined up on the landing field at Honolulu, and when it was certain that the monoplane would get through they went up to escort it. It landed at 7.5 a.m. (English summer time), and at a rough estimate the stage of 2,100 miles took 27 hours. About 1,200 gallons of petrol were carried and the wireless messages were reported to have been heard as far away as Australia.

At 5.20 a.m., June 3, a start was made on the longest of the three sea stretches, Fiji Islands, 3,200 miles away. A large crowd watched from the Barking Sands, where the airmen conferred with army officers and then decided after leaving Kauai to steer towards Oahu to intercept the wireless beacon from Wheeler Field. They expected to follow it for 1,500 miles to the south. Barking Sands is on the Island of Kauai and 100 miles from Honolulu. Seventeen hundred miles away were the Phoenix Islands, and in the case of an emergency a landing could only have been made on Canton Island which is in the former group. About 1,290 gallons of petrol were carried. The weather was per-

fect at the resumption and Capt. Kingsford-Smith was piloting.

When 430 miles out, they were flying at 500 ft. and one generator was giving trouble. After 12 hours' flying, the Fanning Island cable station received a call which suggested that everything was in order, but later in the afternoon rain squalls were mentioned, and then, when 910 miles out, the engines were stated to be unsteady, although there was no cause for danger. Thereafter came regular messages, indicating favourable conditions and progress with occasional doubts about engine antics. As evening came and darkness crept on, banks of clouds were met and a bad night was anticipated. At 8 p.m., the position showed them in a direct line from Canton Island and at 2 a.m. they passed the Phoenix group. Towards dawn, progress was still communicated though faintly, and by 6.30 a.m., the position was stated to be 800 miles from Suva, their destination, and the speed 100 m.p.h. After a four-hours' silence later in the



**THE PACIFIC FLIGHT:** Two long laps of the 7,000 mile flight from San Francisco to Australia have been safely covered by Capt. Kingsford-Smith and his companions in the three-engined Fokker monoplane "Southern Cross." At the time of writing they are at Suva, Fiji Islands, having covered 5,300 miles in approximately 61 hours flying.

morning they wirelessly their position as 400 miles from Suva, and were fighting a desperate battle with a hurricane.

At 2.21 p.m. the monoplane reached Suva and landed perfectly on a cricket field, around which was gathered almost the entire population of Suva, including hundreds of natives. The Mayor greeted the airmen and Sir Eyre Hutson, Acting-Governor of the Fiji and High Commissioner of the Western Pacific, extended an official welcome. The stage from Honolulu took 34½ hours. They had fought a fierce tempest during the night, and Capt. Kingsford-Smith re-

marked that he never wished to experience such weather again.

With the greater part of the long sea journey to Australia safely conquered, there only remains a sea flight of 1,550 miles to Brisbane, and a coastal trip south to Sydney.

The Commonwealth Government is assisting in the final stages. All coastal wireless stations and ships on the course are directed to listen for the machine, whilst two New Zealand naval vessels near Suva are asked to co-operate.

## "THE ART OF FLYING"

"FLYING is an art. Like all arts it requires practice." There is no ambiguity in that, and by these two sentences, the first in the introduction to his book "The Art of Flying," Captain Macmillan makes it quite clear what is his attitude towards a pilot's job. Mind you, he is speaking in the main of what may perhaps be termed exceptional flying, such as the testing of new types and so on. But we do not think that, in spite of his many years' work as a test pilot, the author of this little book regards the air line pilot as being on the level of a London omnibus driver. He does, however, differentiate quite clearly between test flying and similar types of flying on the one hand, and normal flying on well-trying types of machines on the other.

Captain Macmillan's book is not a treatise on how to fly, and those who expect this from it will be disappointed. Rather does it take up the thread where the ordinary flying school leaves off. Neither is it a guide to stunt pilots, although stunt pilots, like ordinary pilots and even beginners can learn a tremendous lot from it. "The Art of Flying" is something much more than that. It represents the accumulated experience of many years of intensive research flying, and shows on almost every one of its 159 pages how extraordinarily observant is the author, perceiving and interpreting phenomena which, it is safe to say, would pass the average man by entirely. As Sir Sefton Branner says of Capt. Macmillan in his foreword to the book, "He has the rare quality of being a perfect pilot, equipped with a sound and scientific brain, which enables him to translate ideas into clearly recorded action, and action back again into improved ideas."

We doubt if ever the charm of flying has ever been better

"The Art of Flying." By Captain Norman Macmillan, M.C., A.F.C. With a Foreword by Air Vice-Marshal Sir Sefton Branner, K.C.B., A.F.C. Duckworth & Co. Ltd. Price 5s. net. Obtainable from the offices of "FLIGHT."

### At St. James's Palace, June 1

HIS MAJESTY THE KING held a Levée on June 1 at St. James's Palace, at which were present Group Capt. R. P. Ross, R.A.F., Aide-de-Camp in Waiting; Marshal of the Royal Air Force Sir Hugh Trenchard; Sir Courtenay Warner; Flight-Lieut. John Barraclough; Flight-Lieut. Henry Battle; Wing-Comdr. John Bradley, O.B.E.; Flight-Lieut. Gerald Bryer, O.B.E., A.F.C.; Flight-Lieut. Charles Carr, D.F.C., A.F.C.; Flying Officer Jack Caulfield; Flight-Lieut. Gerard Combe; Flight-Lieut. William Elliot, D.F.C.; Flying Officer Edward Fielden; Flying Officer Richard Findlay; Flight-Lieut. James Foden, A.F.C.; Sqdn.-Ldr. Charles Foster; Flight-Lieut. George Gardiner, D.F.C.; Flight-Lieut. James Lawson; Lieut. Gwynn Madocks (private owner); Wing-Comdr. Arnold Miley, O.B.E.; Flight-Lieut. Thomas Moore; Mr. Hylton Murray-Philpott (private owner); Flight-Lieut. Geoffrey Pidcock; Wing-Comdr. Thomas Rippon, O.B.E.; Flight-Lieut. Frank Robinson; Flight-Lieut. Walter Seward; Flying Officer Philip Slcombe; Flying Officer Cecil Stone; Sqdn.-Ldr. William Weston, etc.

### Still Missing

THERE is no news of General Nobile's expedition in the airship, *Italia*, which failed to return to Spitzbergen after flying to the North Pole, on May 23. Lieut. Luetzow Holm is about to begin a search in a flying-boat, having reached King's Bay in the sealer, *Hobby*, and continued to Spitzbergen after dogs, sledges and dog-drivers were taken on board. A report states that Italian authorities believe that the airship met with an accident in the region of Wijde Bay on the north coast of Spitzbergen. There are many search

expressed than this: "The aeroplane in the air is one's complete and separate world of which one is master; the earth below belongs to other people and exists only to be used by oneself when desired."

Captain Macmillan lays considerable stress on the importance of "ground thinking," and devotes a whole chapter to this subject. Therein he records how, when he was "learning how to fly" (for he does not consider that he was really taught) he used to sit in his hut of an evening with a poker in one hand and his feet on the cold stove, practising synchronisation of hands and feet.

Those of our readers who had the good fortune to read Captain Macmillan's account of his being adrift in the Bay of Bengal on an overturned seaplane will remember his excellent literary style. This is retained in the present book, and it is to be hoped that he will write many more, not merely of an instructive kind, but which give his powers of description full freedom. Passages in the present book show Captain Macmillan to be capable of word pictures which are a sheer delight. The book is full of epigrams, showing yet another side of the author's genius. Take for instance, the reference to the part which mentality plays in the evolution of a pilot. "Too much imagination places unnecessary strain on the individual, while too little places unnecessary strain on the aircraft."

One section of the book is open to criticism; that dealing with propellers. The author is, or appears to be, rather unkind to the steel propeller, but an explanation from Capt. Macmillan is published in our correspondence columns this week, which should be read by all who obtain a copy of the book, and we hope thousands will do so. It is a book which nobody interested in aviation can afford to miss.

In his introduction Captain Macmillan states that he hopes the fathers of sons who wish to fly will read it, as well as the sons themselves. We would add that we hope also the sons of fathers who wish to fly will read it.

parties preparing expeditions. Sweden has authorised the despatch of three machines to the area, which will probably be Hansa-Brandenburg seaplanes fitted with 450 h.p. Bristol "Jupiter" engines, each having an operating radius of 800 miles. Capt. Riiser Larsen, too, is now on his way to King's Bay. It is suggested to FLIGHT by Capt. Boothby that had the *Italia* been fitted with the hydrogen-fuel system, which could have easily been applied to the engines, it would have been all right, as the system would have given at least 20 per cent. economy in fuel, leaving ample to bridge the short distance left.

### Italian Air Record

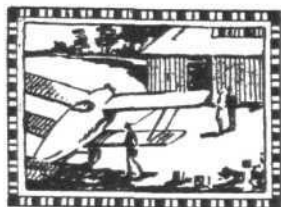
CAPT. FERRARIN and Major del Prete, Italian airmen, broke the world's record for duration flight last week by remaining in the air for 58 hrs. 37 minutes. Their machine was a Savoia-Marcetti S 64 Fiat A 22 550 h.p. engine, and over a triangular course it was estimated that they covered about 5,000 miles, which is a distance record. The duration record beaten was that of 53 hrs. 35 mins., made by Mr. E. Stinson and Capt. G. Haldeman, the American pilots. Capt. Ferrarin was one of the Italian Schneider Team last year. Both airmen stepped from the machine shaved and fresh. It is stated that the flight was actually in the nature of a preliminary test before an attempt to fly from Rome to New York shortly.

### Belgium Claims Record

It is reported from Brussels that two Belgian airmen, M. Crooy and M. Groenen, landed at the Tirlemont aerodrome on June 4 after flying continuously for 60 hrs. 7 mins. 32 secs. If this is confirmed it will beat the record made by the Italians reported above.



## PRIVATE



## FLYING

A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

## WHERE TROUBLE BEGINS

By **IVOR McCLURE**

In these days of the Ubiquitous Moth it is becoming banal to write of an air tour abroad. If it can still be called an adventure, it is a common adventure. There are very few aerodromes left in Europe where a D.H. "Moth" has not already been. There are many more non-aerodromes in Europe where the British light aeroplane has been and that is where the trouble begins.

Keeping to the big air routes of Europe, little difficulty is experienced. There are well-equipped air ports at convenient distances, with emergency landing grounds between. Information about the country to be crossed is readily obtainable. Diverge from these routes and unknown factors creep in and die on you. The aerodromes are no longer always a convenient distance apart, landing grounds are merely said to exist and meteorological reports tell you more about last year's grain crop in Baluchistan than they do about the weather that will afflict you. Sooner or later this leads you down to the green near the village and you feel the hot breath of panting peasants in the back of your neck. Throw away your time table.

My experience has been that it is ignorance that causes the bother. I think it is unwise not to know about the place where one is going to land. It is not always easy to be wise. To reach Vienna you may fly across the Mont Cenis. Northern Italy and the Karawanken Alps where the bumps push the heads of air-minded passengers through the roofs of cabin machines. Or you can go by the most direct route over Brussels to Frankfurt, Nurnberg-and what?

Look at the map and figure for yourself how you would reach Vienna from Nurnberg when there was a strong head wind. Where will you stop for petrol?

After careful preparation of the route in London, I chose Regensburg as a good fuel stop on my recent flight to Constantinople. It is reputed to be the terminus of an air line. It is nothing of the kind; it is an emergency landing ground, having no hangar or supplies. This gave a lot of trouble to others as well as to ourselves.

Herr Ritter Von Lechner, surrounded by his staff, sat on a drum of petrol in the middle of his aerodrome one Sunday morning waiting for us to reach Nurnberg. Otherwise his aerodrome would have been closed on the Sabbath. He waited at the request of his fellow Luft Hansa director at Frankfurt, Herr Neumann, who thought we ought to be helped out of our troubles. What do you know about that?

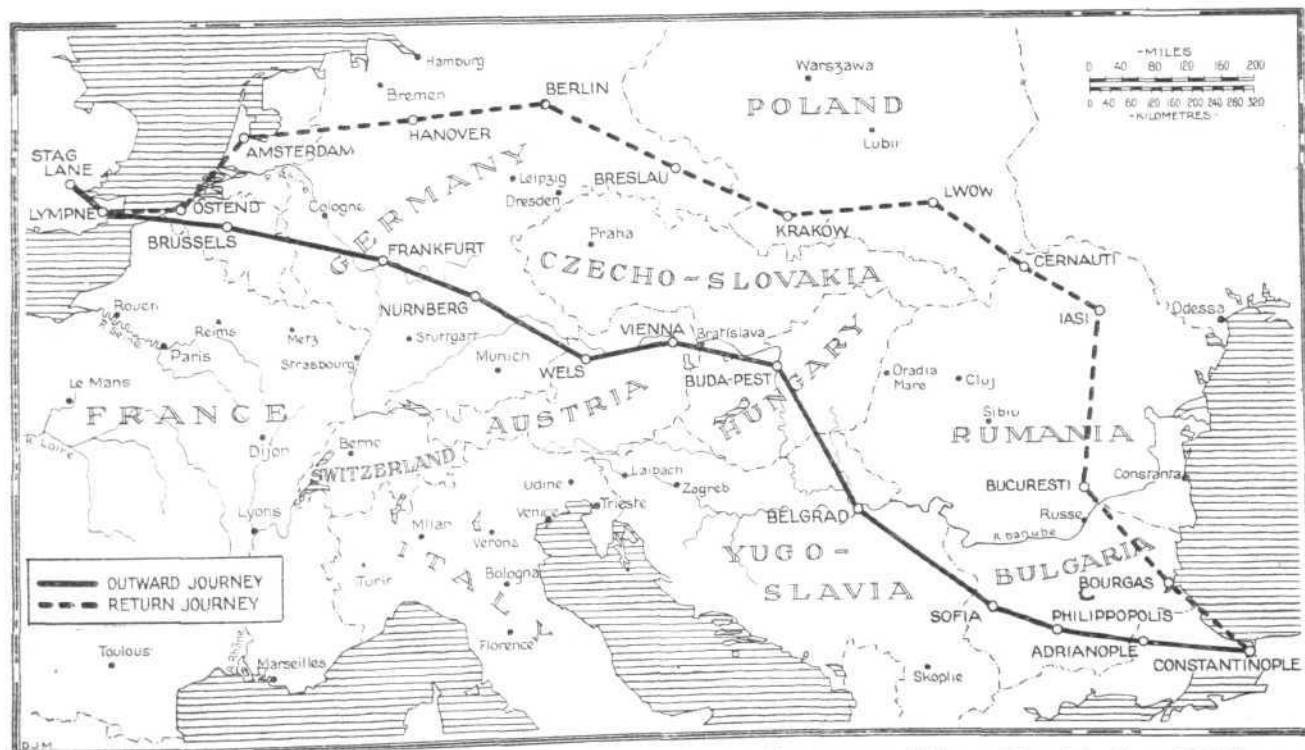
It was silly of us not to know about Regensburg because we were compelled to take Von Lechner's advice and land at Wels (in Austria). To land at any place abroad that isn't an aerodrome is sometimes funny, but always a nuisance. I had Sydney St. Barbe with me, so it was funny enough for me. He hung small boys all round the D.H. "Moth" like presents on a Christmas tree to prevent it being blown away in the gale. St. Barbe always travels with a strong head wind. When I returned after the hours it took me to awaken a garage proprietor and a taxi-driver from a deep Sunday afternoon slumber, I found him the centre of a chorus of "Urchers."

To one boy who touched an aileron he had threateningly exclaimed "Urcher!" The cry had become a religious rite accompanied by the breaking of ribs. It was a cheery crowd enjoying itself.

The petrol blew away horizontally in the rising tornado, only a feeble proportion entering the tank. We couldn't go for more because of the "Urchers," so we took off.

Some miles before reaching Vienna it was clear enough, and we were no casual observers, that it was going to be "touch and aller" whether the petrol was sufficient or not. The last two miles to the aerodrome, over the centre of the city of Vienna, provided those sensations that are appropriate to intrepid airmen. We can honestly say that we would not attempt to pick them. Four hundred feet over the aerodrome the engine gave a puff of black smoke and we landed on the circle with a dead stick.

The same story in different clothes. Between Sofia and Constantinople it is necessary to land for petrol. The Bulgars told us that an old aerodrome at Mustapha Pasha



**A PRIVATE TOUR TO TURKEY:** This sketch map traces the course followed by Mr. Ivor McClure and his passenger during a recent air tour to Constantinople and back in his own D.H. "Moth" (Cirrus).

would make a good landing place half-way. Let me say at once that there is no such thing; there is no possible place to land there. I have sent word to the Bulgars about it.

The trouble this gave rise to is but a link in a chain of agony. To leave Sofia, it is necessary to cross the Ihtiman pass, and this we had to do above the clouds. Such grandiose scenery as may be, and in all probability was present on such an occasion, is marred by one's imagination. After all, it is probably no worse than flying the Atlantic. But one begins to wonder, with remorse, whether one has given the "Cirrus" all the attention that it undoubtedly deserves. One would like to get out then and there and do something kind to it. Half-an-hour after you have forgotten that you have an engine. Life is bitter.

In the Maritza valley we ran into fog and had to return to Plovdiv, now no more than an historical relic of a series of dastardly earthquakes. A breeze sprang up which enabled us to reach the disappointments of Mustapha Pasha. It mustapha aerodrome. (Historical remark made by myself and regretted.) So we decided to try Adrianople, about which we knew that it was near the hostile Greco-Turkish frontier, that the town was in Turkey and its old aerodrome in Greece, and that to fly over a battlefield, even if disguised as a frontier, in no way assists aviation.

We landed on ground that was not all it looked, for the wheels sank out of sight. As far as the eye could reach the soil appeared the same, so that even if we got petrol there seemed no hope of getting off with it. Then the police arrived and put us under arrest. That was a cup full.

And now about more pleasant things and Captain Ibrahim in particular. He is the chief of the meteorological station at Adrianople; in his spare time I should say that he was something to do with the police, judging by the efficiency with which he questioned me. Did you know that America sent a delegation to Turkey to study secret police methods, reputed to be the finest in the world? The proof of this is Chicago. Captain Ibrahim satisfied himself that no enemy State was paying me sufficient salary to make my visit to Turkey worth his anxiety, and then he pulled us out of the slough.

Under his direction, massed peasantry pushed the machine two miles and down a rocky precipice to the river, only breaking one rib. There we folded the wings. I threw a pretty agony while we gingerly pushed "UR" over a touchwood bridge that blew away in clouds as one walked on it. In Turkey they destroy brilliantly, build miserably, and repair never. We picketed down on the edge of a splendid natural aerodrome in a bend of the river, Ibrahim providing the pickets and rope, two armed guards over the machine all night, and a motor car to take us to the town where we were his guests. Next morning he called for us with weather reports and took us to the D.H. "Moth" where petrol was waiting for us in an ox wagon under an armed escort mounted on a superb Arab stallion—very pretty to watch. I am ready at any time, with anybody, to drink to the health of Captain Ibrahim of Adrianople, and I know where to land there next time.

Speaking of kindness, we spent a good deal of time on the Franco-Roumaine Air Line. I used to speak disparagingly of it, actuated by God knows what ignorant prejudice. I never wish to hear a word against it. With eight-year old Spads and Lorraine engines of a model that has long gone out of production, the most magnificent pilots run an 85 per cent. regular service, with no weather reports, over some of the most forbidding country that you could pick in Europe. Their cheeriness and hospitality make other places feel like a morgue.

If ever you go to Belgrade, I commend you to M. Lavocat, the chief of the Franco-Roumaine aerodrome there. In the dire days when we were held up in that Capital City situated on the wrong side of the Danube to its aerodrome, St. Barbe and I went to the aerodrome just to see Lavocat

smoking his pipe. Immediately the Spad had departed he would shoulder his gun and tramp off after duck, if any, sparrows if not. A cheery, friendly, civilised European in a savage land.

When you get to Sofia, I hope you will find M. Lavocat's opposite number, M. Thuau, and get him to tell you of the earthquake. How, at the first shock, his wife and he ran down to the front door and stood there, not caring to venture out, but not wishing to go in. After a period of calm, they crept up gingerly to bed; immediately came another shock, and down they ran again. So occupied, they passed the night.

When you reach Constantinople, if you do, ask M. Buchon, the Ace of Mechanics, to overhaul your engine. To watch him at work is an exquisite pleasure; the best type of French mechanic may be equalled, but cannot be beaten. My "Cirrus" was grateful, for never before had it flown so fast or climbed so high. Stay a night, if you dare, at the "Splendid Palace" near the aerodrome, unless you are afraid of rude things like lobsters snapping at you from the walls. There, practising billiards, may be the pilot Bonne Tête, a sober, kindly man of few words, who is reputed to have written a commentary on Einstein. Rugamer, a typical humorous Parisian, may be over from Bucharest. Make him talk of that phenomenal bump that you always get over Nish, near the Dragoman Pass. A machine was once turned over by it, and crashed in a vineyard. Rugamer calls it the "Bonjour de Nish."

On the way to Bucharest, stop, as you must, at Burgas for petrol at the Franco-Roumaine emergency landing ground. The French mechanic there is a good fellow. After spending all his life in Paris, he had been plunked down in the wilds of Bulgaria, and had only just been joined by his wife when we arrived. Their previous knowledge of agricultural existence had been the butcher's and the grocer's shop, but a love of the land is born in every Frenchman. These two were coping with the mysteries of goats and chickens, vegetables and flowers, besides decorating the interior of their cottage, making for themselves a tiny patch of civilisation in a primitive country. We were most hospitably invited to lunch, which, as they informed us, was all ready. But while we gladly accepted at the front of the house the wild Bulgarian sheep dogs were busy finishing the food in the kitchen, the door of which had been left open. Madame had another lunch ready in ten minutes.

You may derive amusement, as we did, at Bucharest, from the brisk and business-like representative of the Vacuum Oil Company. Mistaking us, no doubt, for some flying stunt-merchants, and, indeed, he said I resembled Lindbergh, he turned up with a folding pocket camera and wished us to adopt a dozen striking attitudes with and without goggles. General Dumitrescu, "the Superior Director of Aeronautics," was taking a joy ride in "UR," so our "Vacuum" friend was in a frenzy of delight snapping the General from every aspect.

I hold no particular brief for the product itself, since I cannot tell the difference between one oil and any other that gives one no anxiety. But I do exclaim my admiration for the organisation of the company. At every aerodrome where we had said we would land, our brand of "Vacuum" was waiting for us. If you can imagine what would have happened had this not been so, you will appreciate the enormous difference that it made. The fun of running on a local Ruritanian brand would, to us at any rate, have appeared insignificant, jolly pastime though it may be.

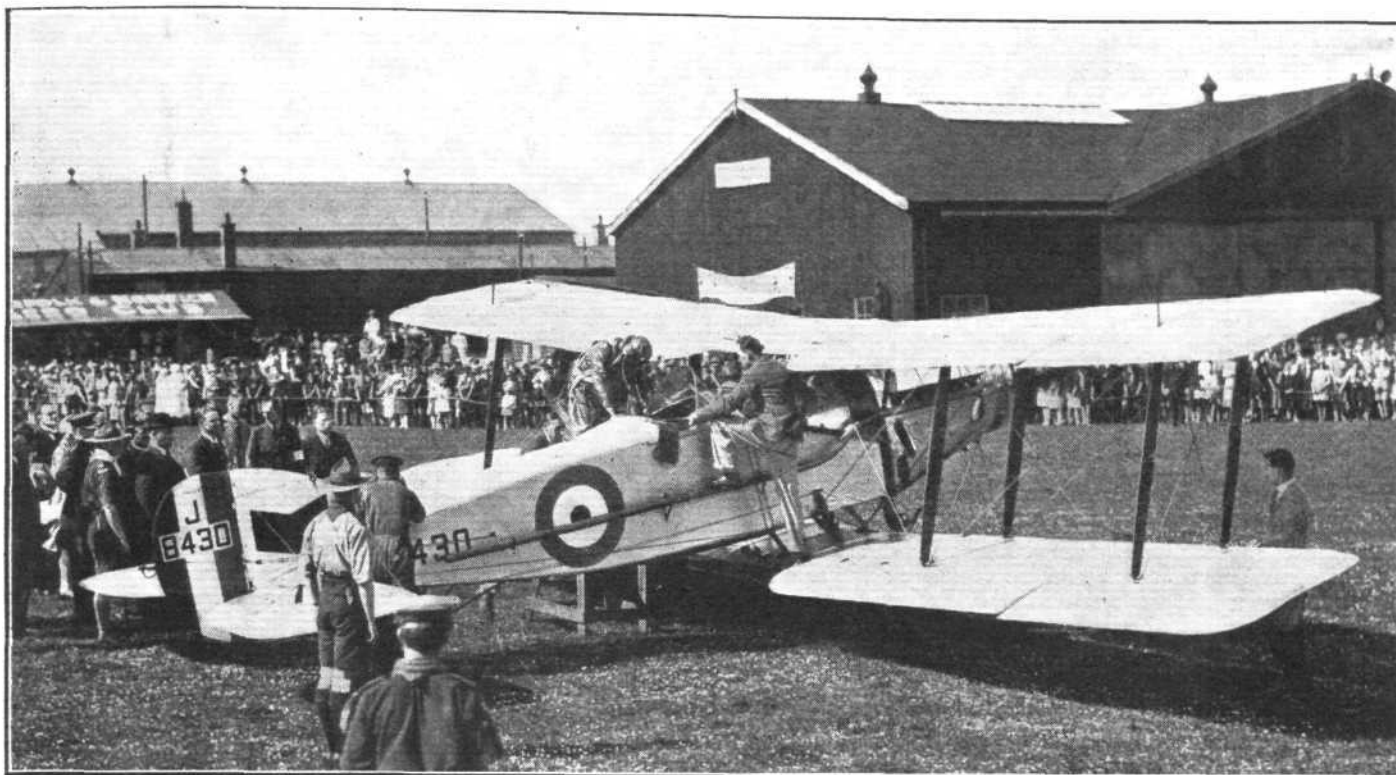
Friends such as these make pleasant memories for any journey. Troubles, of course, one will always have. It seems to me that it is possible, to a certain extent, to choose where one will have one's troubles. For trouble taken beforehand is voluntary, and may obviate the other kind which is not. You may not agree about this. But you will agree, I think, that if we can get someone else to take the trouble for us, that is the thing.

## THE NORFOLK AND NORWICH AIR DISPLAY

THE Norfolk and Norwich Aero Club held its Air Display on Wednesday, May 30—the day looked forward to for such a long time with longings and hopes mingled with fears in case it should be wet. For a wonder, however, it was just a perfect day; blue sky, cloudless, where machines could fly away up into the heavens and become invisible to the human eye. Such was the weather for the Royal visitor, H.R.H. the Prince of Wales. Thousands of people thronged up to the aerodrome, and members and their guests greeted His Royal Highness with loud cheers as he inspected the

machines of the club and those of its many friends who were good enough to come down for the occasion. The Prince was met by the Club chairman, Capt. A. A. Rice, M.C., and several of the directors were presented. After the inspection the Prince left for the city and said he was returning later. Great was the excitement when a wire arrived announcing the departure from Northolt Aerodrome of the Prince's two machines, for it was then practically certain that His Royal Highness would leave Norwich by air, and thus add to the interest of the occasion. After lunch some thrilling displays





**THE PRINCE OF WALES FLIES :** Our picture shows His Royal Highness entering his Bristol Fighter (fitted with Handley Page Slots)—which has been set aside for his special use—at Mousehold Aerodrome, Norwich, prior to his flight to Northolt, on May 30. Before his departure, the Prince inspected the Norfolk and Norwich Aero Club, which has its home at this Aerodrome.

were given by the various visiting pilots, including crazy flying, upside-down flying, stunting, and several competitions were entered for with zest.

About 3.30 His Royal Highness returned to the aerodrome, and became so interested in the event on the programme depicting a parachute descent by Mr. Tranum that he decided to stay and see it. The drop was beautifully done and caused much applause. Shortly after this the Prince climbed into his machine and set out for Northolt amidst resounding cheers.

Joy-riding then became very popular, and many people looked down on their homes from the air. Altogether the day was a tremendous success, and passed off without the slightest hitch.

In the annals of the club this will go down as the red-letter day, and all the members appreciate the great honour to the club, and it is hoped that it will not be the last occasion on which His Royal Highness will grace the club with a visit, by land or air.

## FLIGHT-LIEUT. R. R. BENTLEY'S LECTURE

FLIGHT-LIEUT. R. R. BENTLEY gave a lecture on some technical aspects of his flight to Cape Town and back before the Royal Aeronautical Society on June 1, at the Royal Society of Arts. The President of the Society, Col. The Master of Sempill, was in the chair.

We have already followed Flight-Lieut. Bentley's flights in his D.H. "Moth" (Cirrus) in *FLIGHT* in detail, and we therefore propose to deal here with the interesting discussion that arose after his lecture, as it mainly brought out the technical aspects.

The President wished to know Flight-Lieut. Bentley's opinion of the ideal light aeroplane to suit the particular conditions he met and in what respects it would differ from the machine used. Also what inspections were carried out and had more than one propeller been used? Flight-Lieut. Bentley, replying, said that in his opinion the ideal machine for such a journey as he had described would not vary greatly from the machine he had used. The type of machine he had used was very satisfactory indeed, but there were one or two points about the construction which might be altered. For instance, there should be a more comfortable front seat. Also, the fuselage of the machine should be covered entirely with fabric, glued on to the 3-ply before it was painted. The back of his D.H. Moth, which was fabric covered, had withstood all the stresses imposed by varying temperatures, strong sun and rain, but on the sides of the fuselage, which were not so treated, the top surface of the 3-ply had cracked—not seriously, but more than it ought to in aircraft. That could be definitely remedied, he believed, by covering the 3-ply with fabric. Concerning controls, he said that wherever there was any friction between them and other objects he had had them covered with copper, using a strip of copper, the width of which was equal to the circumference of the control wire, and clipping it round the wire for a distance of about 8 in. That was sufficient to cope with any friction due to the movement of the control past an object with which it came

into contact. The controls on his machine now were those used on his flight southward.

With regard to the daily inspections, he pulled out the oil filter and examined it for signs of metal of any description, a practice which saved him from trouble after leaving Jinja, for it was there that he had detected the presence of steel filings. Next, the petrol filter was examined. It was very seldom found in a condition which would jeopardise the certainty of the petrol flow, however, because the petrol was always put through a chamois leather funnel when the tank was filled. Then he examined and cleaned all contact breakers, examined the bolts which held down the engine to the engine mounting, all rocker gear and valve springs, and lubricated all the valve stems with Dixon's graphite and grease by means of a specially constructed gun to pass between the springs and partially encircle the valve stems. Incidentally, the valves now on the machine were those used on the southward flight. The rocker gear was also lubricated with a mixture of graphite and grease. His K.L.G. plugs were changed once every 10 hrs. He had carried a spare set, and the set which was not in use was cleaned at leisure, but was ready to replace the set in use at the end of 10 hrs. He had flown to the Cape and back on the same two sets of plugs (K.L.G.). The tightness of the propeller on the boss was also tested each day. The propeller used for the outward flight was still on the machine. A practice adopted in South Africa was to enamel the propellers with Ripolin enamel, balance them, and then paint the back faces a dead black, so that they would not dazzle the eyes of the pilot. On arrival in South Africa he had had both propellers (the one used and the spare one) tested for pitch, and found that the propeller used was in better condition than the spare one; it had lost no pitch at all.

Replying to Sqdn.-Ldr. Slatter with regard to navigation, he said the route was not at all a difficult one. The route across France and down the Italian coast was quite easy to follow, but the route he would use in future would be via



Tunis, for the sea journey was only 70 miles, and it was quite easy to follow provided one took drift observations before leaving the land. There were two large places to aim for, depending on whether one was flying towards Africa or towards Sicily, so that it was not difficult to steer a fairly accurate compass course.

As to the examination of the machine itself, in reply to Mr. Chorlton, he said there was very little to do. Only on one occasion had bolts to be tightened, apart from an occasion at Catania, when he had detected a certain amount of looseness in the planes.

Replying to Mr. Manning, he said the rubber shock absorbers seemed to be still as resilient as they were when the machine was new, and the two tyre covers used on the outward flight were still on the machine. He had had two punctures in the course of the 394 hours during which the machine had been flying. The thorns mentioned existed in Central Africa, but they were not in evidence on the aerodromes. Past experience had taught them that the aerodromes must be kept clear of them. There had been no trouble due to shrinkage, except in one isolated case. Not a wire had to be touched. The ant which could do damage in Africa was the termite or white ant, but it did cause trouble on South African aerodromes.

Replying to Capt. Sayers, he said that one part of the journey which was dangerous was between N'Dola and Tabora, a distance of about 550 miles, and another was between Malakal and Mongalla, a distance of about 300 miles. The total distance which was dangerous over the whole route was a distance of about 1,000 miles. Perhaps,

also, it would be unsafe between Benghazi and Syrt, on the North African coast, where there were many Arabs, the distance between those two towns being 300 miles.

In reply to Capt. C. C. Walker on the question of temperature, he said that when flying through Africa it was always advisable to get off as early as possible each morning, attain an altitude at which the air was cool, and stay there for the period of the flight. If one descended to a lower altitude, bumps were encountered, and it was very difficult to get up again through the hot air. If one started early each morning one need not worry as to the take-off and the performance of the machine in the air. It was rather difficult to make a comparison as between the performance of the D.H. "Moth" in this country and in Africa. If, however, one flew a D.H. "Moth" at sea level, carrying the normal amount of petrol (19 galls.) and no spares or tools, and then flew it again at sea level when loaded to a total weight of 1,550 lbs., the difference would represent about the difference between flying at sea level and at altitude in a place such as Nairobi under constant conditions of loading.

Replying to Col. Fell, he said that during the whole of the flight the throttle was a little more than half-way open, no matter what the altitude. At sea level the machine travelled at nearly 80 m.p.h., but at altitudes of about 8,000, 9,000, and 10,000 ft. in the tropical heat during the day the cruising speed fell off to about 70 m.p.h. or a little lower. He had not opened the throttle, however, in order to pick up speed.

In answer to Flight-Lieut. Allen, he stated that the tail-skid spring was fitted to the machine when he left England.

## HAMBLE PAGEANT ECHOES

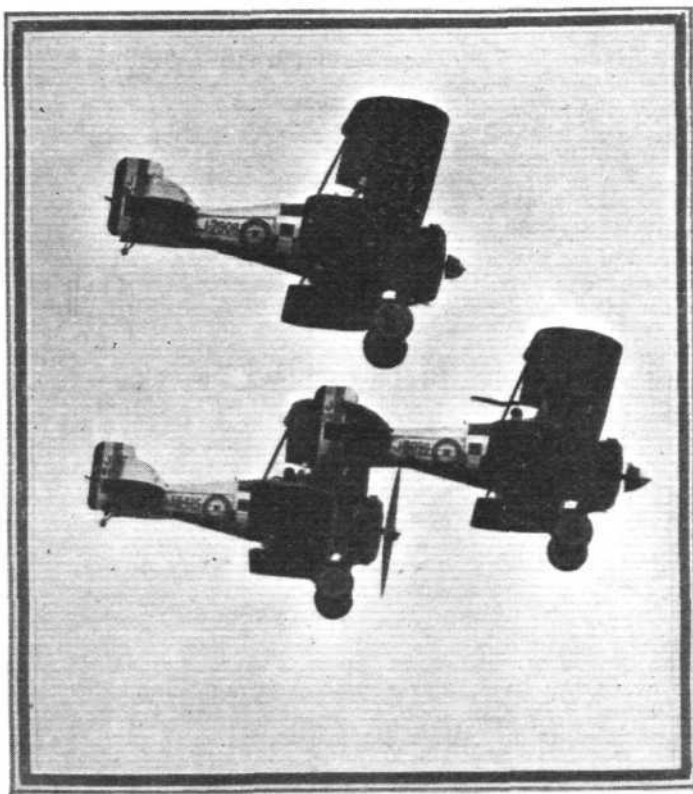
THE second Hampshire Air Pageant held last week at which the attendance was estimated at nearly 50,000, was supported by most of the light 'plane clubs. The Midland Club sent their instructor, Flt.-Lieut. Rose, with a D.H. "Moth," the Bristol Club had their instructor, Mr. Bartlett, flying, and the London Club the yellow D.H. "Moth," with several members. Flt.-Lieut. N. Comper represented the Felixstowe Club, and an Avro "Avian" and a D.H. 53 came from the R.A.E. Club, whilst the Halton Club won success with their machine through Flt.-Lieut. Le Poer Trench. The Suffolk Club turned up in force to support their instructor, Mr. Lowdell, on the Blackburn "Bluebird," and they were proud when he won his way on the same machine into three finals.

At the end he achieved one second place and one third. The club hoped to send both their Blackburn "Bluebirds," but a hitch arose at the last moment concerning the second machine, over which they had no control. They hope to hold a small air meeting themselves later in the season. Miss Brown, of Lancashire Club, was there with her own Avro "Avian."

Capt. A. M. Blake, the Blackburn Aeroplane Company's test pilot, was present, but not flying, for a change, as Flt.-Lieut. Chick had his machine, "UH." In his eagerness to cover the shortest route, during one race, Flt.-Lieut. Soden unintentionally brought a telegraph wire down, with slight damage to his machine and some little inconvenience to communications, but he recovered control easily and continued.

Mr. H. Bolas, the Parnall Company's designer, watched Flt.-Lieut. Bonham Carter fly his "Imp," and Mr. Alan Butler, chairman of the de Havilland Company, flew in many races. Mr. Fairey in his yachting rig was more imposing than ever, Sir Sefton Brancker was an energetic steward, and so was Mr. A. V. Roe. Other visitors were Capt. F. Guest, Air Commodore E. A. Masterman, and Brigadier-General P. R. C. Groves.

With the exception of Lady Bailey, nearly all our lady owner-pilots were there. Miss O'Brien was busy joy-riding with her blue D.H. "Moth." But there were not so many private owners as one anticipated. Dr. Whitehead Reid was in his capacity as Pilot Officer of the Auxiliary Air Force, but not as far as one could see, flying his Westland "Widgeon."



["FLIGHT" Photograph]  
R.A.F. ITEM : Three R.A.F. Gloster "Gamecocks" flying low in formation. These machines played a prominent part in the Pageant.

The Pageant Committee, with Mr. R. J. Parrott as chairman, and the officials of the course, can be congratulated for the efficiency of their work and organisation.

## THE MIDLAND AIR PAGEANT

The Midland Aero Club have arranged a "bumper" programme for their second Air Pageant, which will be held at Castle Bromwich Aerodrome on Saturday, June 9. Last year's Pageant was undoubtedly one of the most successful meetings of the year, and given good weather on Saturday, there is every reason to hope that this success will be repeated, if not amplified.

In addition to four main competition events, a number of "side shows" have been arranged. The competitions will consist of the following:—

*The Air League Challenge Cup.*—A handicap race over a 24-mile course for the Challenge Cup and £50, presented by the Duke of Sutherland, President of the Air League of the British Empire, and second and third prizes of £25 and £10

respectively. Open to all clubs affiliated with the Royal Aero Club, for machines not exceeding 400 kg. empty weight.

**The Midland Inter-Club Challenge Cup.**—The cup will be awarded to the affiliated club who enters the aircraft which wins the race. The race is open to *ab initio* trained pilot members of all clubs affiliated with the Royal Aero Club. Competing aircraft must be the *bona-fide* property of, and registered by, an affiliated club, or individual member of such club. The pilot must be a British subject. The piston displacement of the power plant of competing aircraft must not exceed 5,000 c.c. Competitors in this event qualify for the Society of British Aircraft Constructors' Cup, which is to be competed for at four British flying meetings. The club entering the winning machine receiving 5 points; for second place 3 points; and third place 1 point. Course, 12 miles 2 furlongs. First prize, Midland Inter-Club Challenge Cup and £25. Second prize, £10. Third prize, £5.

**Midland Open Challenge Cup.**—The cup will be awarded to the winner of the race. The race is open to any properly certificated pilot and any type of aeroplane. Course, 24 miles 4 furlongs. First prize, Midland Open Challenge Cup and £100 presented by Colonel Sir Charles C. Wakefield, Bart., C.B.E., D.L., J.P. Second prize, £25. Third prize, £10.

**Balloon Bursting Competition.**—This event is open to all comers. Competing machines will be circling overhead when a bunch of gas-filled balloons will be released, the competitor then being allowed three minutes to chase the balloons, fly into and burst them, then land. The pilot bursting the greatest number in the allotted time to be the winner. At the end of three minutes, in the event of balloons still being intact, a light will be fired from the ground as a signal to land. First prize, Midland Silver Aeroplane and £15. Second prize, £10. Third Prize, £5.

Among the "Side Shows" will be included:—

Inverted flying exhibition by Mr. E. G. Lowdell on a Blackburn "Blue-bird" light aeroplane fitted with an Armstrong-Siddeley "Genet" engine.

Instructional demonstration, in which Flight-Lieut. Cox, M.C., A.F.C., Adjutant of No. 605 County of Warwick

(Bombing) Squadron, will demonstrate some of the evolutions which constitute "Advanced Dual Instruction" in the art of aviation.

Display of aerobatics by Capt. Neville Stack—who made history by being the first pilot to fly a light aeroplane from this country to India—on the A.D.C. "Moth," G.-E.B.U.F.

Exhibition of evolutions. A flight of four Gloster "Gamecocks" will give an exhibition of drill, and will fly over the aerodrome in various formations. The machines will be piloted by Sqdn.-Ldr. C. N. Lowe, M.C., D.F.C. (Leader); Flying-Officer N. A. P. Pritchett, Flying-Officer H. C. O. Hayter, Flight-Lieut. A. C. Collier.

Capt. H. A. Brown will give a display on the Avro "Avian." This machine is the same type as that flown by Sqdn.-Ldr. Bert Hinkler, A.F.C., on his historic flight from this country to Australia.

Individual aerobatic display. During this display, Flight-Lieut. A. C. Collier will loop, spin, roll, half-roll, off the top of a loop, fly upside down, and carry out numerous other complicated manoeuvres.

Parachute descent by Miss June, who will descend in the "Guardian Angel" parachute from a machine of the Surrey Flying Services, piloted by Captain Muir (weather permitting).

A demonstration of speed by Flight-Lieut. Luxmore, on the Avro "Avenger" with 450 Napier engine.

A ground straffe, in which a hostile tank is surprised by a flight of fighting scouts and immediately attacked and bombed to destruction by Sqdn.-Ldr. C. N. Lowe, M.C., D.F.C. (Leader), Flying-Officer N. A. P. Pritchett, Flying-Officer H. C. O. Hayter, and Flight-Lieut. A. C. Collier.

A display will be given by Capt. Hubert Broad on the De Havilland "Moth," fitted with the Handley-Page slotted wing device.

A display by Capt. Louis Page, chief test pilot to the Westland Aircraft Company, on the Westland "Widgeon," Wing walking by the Surrey Flying Services.

Bombing of derelict fort. A fort which has been evacuated by our forces will be destroyed by aircraft in order to render it useless to an opposing army.

## LIGHT 'PLANE CLUBS

**London Aeroplane Club**, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.

**Bristol and Wessex Aeroplane Club** Filton, Gloucester. Secretary, Capt. C. F. G. Crawford, Filton Aerodrome, Patchway.

**Hampshire Aero Club**, Hamble, Southampton. Secretary, H. J. Farrington, Hamble, Southampton.

**Lancashire Aero Club**, Woodford, Lancs. Secretary, C. J. Wood Oakfield, Dukinfield, near Manchester.

**Midland Aero Club**, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

**Newcastle-on-Tyne Aero Club**, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

**Norfolk and Norwich Aero Club**, Mousehold, Norwich. Manager, F. Gough, The Aerodrome, Mousehold, Norwich.

**Nottingham Aero Club**, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.

**The Scottish Flying Club**, 101, St. Vincent Street, Glasgow Secretary, Harry W. Smith.

**Southern Aero Club**, Shoreham, Sussex. Secretary, C. A. Boucher, Shoreham Aerodrome, Sussex.

**Suffolk Aeroplane Club**, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.

**Yorkshire Aeroplane Club**, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

### LONDON AEROPLANE CLUB

Total flying time for week ending May 27, 36 hrs. 15 mins. Dual instruction, 16 hrs. 25 mins. Solo flying, 19 hrs. 50 mins.

Total flying time for week ending June 3, 38 hrs. 25 mins. Dual instruction, 17 hrs. 40 mins. Solo flying, 20 hrs. 45 mins.

During the past week the following members passed the flying tests for Aviators' Certificates:—E. R. Andrews, R. Ward, I. C. V. K. Watson, R. H. E. Sanders-Clark.

Monthly return for May.—Dual (202 flights), 84 hrs. 45 mins. Solo (177 flights), 83 hrs. Passenger flights (33), 11 hrs. 45 mins. Test flights (76), 12 hrs. 45 mins. Total (488 flights), 192 hrs. 15 mins.

Midland Air Pageant.—The Club will send a D.H. "Moth" to Castle Bromwich on Saturday, June 9, 1928, to take part in the following events:—Air League Challenge Cup, Pilot, E. E. Stammers. Midland Inter-Club Challenge Cup, Pilot G. H. Craig. Midland Open Challenge Cup, Pilot F. R. Matthews.

Mr. N. H. Jones, on his own "Moth," will also represent the London Aeroplane Club in the Air League and Midland Challenge Cups.

### BRISTOL & WESSEX AEROPLANE CLUB

Report for week ending June 2.—Total flying hours, 14 hrs. Dual instruction, 5 hrs. 10 mins. Passengers, 3 flights, 40 mins. Cross-country flights, 7 hrs. 5 mins.

Instruction: (With Mr. Bartlett) Messrs. R. S. W. Clarke, Hughes, Peters, Lynas, Singh and Button. (With Mr. Tratman): Messrs. Singh and Button. Mr. Downes-Shaw, accompanied by Mr. Bartlett, flew to Hamble in G-E.B.T.V. to attend the Hampshire Pageant and returned on the 29th.

Mr. Hall flew with Mr. Bartlett to Plymouth on the 31st and returned the same day. Strong winds and a poor visibility prevented the journey from being an entirely pleasant one.

The same high winds have cut down our flying hours this week, which is a pity, as otherwise the weather has been admirable.

### EDINBURGH AERO CLUB

MR. DAVID A. FAIRLEY, C.A., 3, Palmerston Place, Edinburgh, has been appointed secretary of the Edinburgh Aero Club in room of Mr. Thomas J. Connolly, B.L., Solicitor, Leith, whose duties as organising secretary have now come to an end.

At a meeting of the Club held yesterday it was agreed to instruct the secretary to thank Mr. Connolly for what he had done in initiating the club

and putting it on its feet, and also to extend a welcome to him to any meeting or function held in connection with the club in the future.

Mr. Connolly is at present promoting a Private Aeroplane Owners' Association, and is also interested in the formation of a commercial aero company.

### HAMPSHIRE AEROPLANE CLUB

TOTAL time for the month of May, 290 hrs. 5 mins. Dual instruction, 73 hrs. 30 mins. "A" pilots, 55 hrs. 20 mins. Solo, 27 hrs. Passenger flights, 36 hrs. Instructors' tests and Pageant flying, 8 hrs. 15 mins.

Report for week ending June 3.—Total flying time, 20 hrs. 10 mins. Dual instruction, 3 hrs. 40 mins. "A" pilots, 7 hrs. 25 mins. Solo, 3 hrs. 05 mins. Passenger flights, 5 hrs. 25 mins. Tests, 35 mins.

Instruction with Flight-Lieut. Swoffer: Messrs. Tillard, Westlake, Johnson, Wroughton, Walker, Bailey, Mandeville, R. King, Sir T. Munro.

Passengers: Mr. A. V. Roe, Mrs. Anderson, Mr. Wills, Wait, Rosevear, Westlake, Johnson, Lovett, Mole, Miss Claver, Mr. Turner, Mrs. Waterman, Mr. Hill.

"A" Pilots:—Messrs. Parker, Bowen, Capt. Kirby, Lieut. Heineman, Messrs. Fagan, Leech, Hayter, Heath, Southey, Falconar.

Soloists: Sir T. Munro, Messrs. Westlake, Scott-Hall, Bott, Wroughton. Miss Grace has carried out a first successful solo, and also Mr. Wroughton, Messrs. Tillard, Collier and Richardson have completed their tests for their "A" licence, this brings our number of "A" licence members to 38.

We are still breaking records, last month with a total of 200 hrs., and Sunday with a total of 18 hrs. 50 mins.

### MIDLAND AERO CLUB LIMITED

Report for week ending May 26.—Total flying time, 27 hrs. 15 mins. Dual, 16 hrs. 19 mins. Solo, 6 hrs. 45 mins. Passenger, 3 hrs. 30 mins. Tests, 41 mins.

Dual instruction (with Flight-Lieut. Rose, D.F.C., and Mr. Sutcliffe): E. P. Lane, J. B. Briggs, S. H. Smith, H. Beamish, Capt. H. G. Tower, N. Khatri, W. Swann, T. H. Drury, G. R. C. Hill, W. M. Morris, J. Cobb, R. C. Baxter, J. Rowley, M. Turner, A. E. Coltman, S. G. Hall, G. Savage. Solo: E. P. Lane, C. W. Fellowes, H. Tipper, S. G. Hall, J. Rowley, G. Robson, R. D. Bednell, E. J. Brighton, S. H. Smith, W. M. Morris, R. L. Jackson.

Passenger: Flights were given to nine members. On Saturday, Flight-Lieut. Rose flew LW to Hamble for the Hampshire Pageant.



# NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending June 3.—Total flying time, 60 hrs. 40 mins. Instruction, 15 hrs. 55 mins. "A" Pilots, 35 mins. 40 hrs. Passengers, 7 hrs. 10 mins. Tests, 1 hr. 55 mins.

Instruction (with Mr. Parkinson): Mrs. Kish, Capt. Lynden Bell, Miss Klyver, Messrs. Kendrick, Cochrane, Carr, George, R. G. Lawson, Temple, Nicholls, Fairless, Hayton, Welch, Griffiths, Swann, L. B. Dickinson, V. Heaton.

Secondary dual: Miss Leathart, Messrs. Robertson, Turnbull, Runciman, Lloyd Browne.

"A" Pilots: Miss Leathart, Mrs. Heslop, Messrs. Heppell, Lloyd Browne, Davey, Runciman, Turnbull, H. Ellis, White, R. N. Thompson, C. Thompson, Robertson, Irving, Wilson, Stewart, Phillips, N. S. Todd, A. Ball, Dr. Alderson and Dr. Dixon.

Passengers (with Mrs. Heslop): Mr. C. Thompson; (with Mr. H. Ellis), Mr. Nicholls; (with Mr. C. Thompson), Mrs. Heslop, Mr. Luckman, Mr. J. M. Kennedy; (with Mr. A. Bell), Mrs. Fairless, Mrs. Hayton, Miss Klyver, Mr. White, Mr. Fairless; (with Mr. J. S. Robertson), Mr. A. Bell; (with Mr. J. D. Parkinson), Mrs. Gregorson, Mrs. Fairless, Mrs. Gibbon, Miss Nicholls.

A new record for one day's total flying was established on Sunday, when 20½ hrs. was completed and the week's total beats all previous records for the Club.

Mr. Parkinson and Mr. Turnbull will take part in the Midland Club's Meeting at Castle Bromwich on Saturday, flying the Club's Moth "PT" and Miss Leathart has entered her Grasshopper "AIN" in the Open Handicap.

Miss Leathart has put in an hour's flying on the Grasshopper, the first since its C. of A. overhaul.

Mr. Wallace, on Moth "PM" called for lunch, and petrol on Thursday, on his way South from Scotland, but owing to fog, he was unable to proceed on the journey until Friday.

# NORFOLK & NORWICH AERO CLUB

REPORT for week ending June 3.—Total flying time, 22 hrs. 39 mins.

Instruction (with Mr. Young): Messrs. A. A. Rice, H. Neave, D. Corsellis, F. Rinder, A. J. K. Finch, C. Land, C. Browne, F. W. Palmer.

Soloists: Messrs. F. Gough, G. Barker, H. Pank, R. T. Harmer, R. W. Moore, W. P. Cubitt, H. Mack, W. A. Ramsay, R. F. Potter, G. F. Surtees, E. Lambert.

Passengers: 74.

A report of the Club Air Display will be found on page 422.

# SUFFOLK AND EASTERN COUNTIES AEROPLANE CLUB

REPORT for week ending May 26.—Flying time, 12 hrs. 45 mins.; instruction, 4 hrs. 25 mins.; "A" and "B" pilots, 50 mins.; soloists, 35 mins.; passenger flights, 3 hrs. 5 mins.; tests, 10 mins.; ferrying machine, 3 hrs. 45 mins.

REPORT for week ending June 2.—Flying time, 11 hrs. 55 mins.; instruction 2 hrs. 40 mins.; "A" and "E" pilots, 1 hr. 5 mins.; soloists, 10 min.; flying at Hamble and Norwich, 4 hrs. 15 mins.

Owing to the Hampshire Air Pageant no report was sent in last week, for which due apologies.

The two weeks now under review have witnessed a period of much disorganisation, what with preparations for Hamble, the meeting itself followed by the Norwich display. Now we are faced with the Midland Air Pageant.

We wish to tender our thanks to Hampshire and Norfolk for the very

good time they gave us at their meetings, and we hope to return their hospitality in the future.

Hamble and Norwich have already been fully reported, therefore there is no necessity to refer to it here. We were naturally pleased with Mr. Lowdell and the "Bluebird," for being the only individual pilot and machine to get into all three finals at Hamble. Also we were much gratified that H.R.H. the Prince of Wales was so interested in our "Bluebird" at Norwich. And that Dr. Sleight, our Chairman, won second prize in aerial golf, and Mr. Lowdell third in balloon bursting. There are signs that people are beginning to realise the advantages of side-by-side seating, as is standard in our machines.

# YORKSHIRE AEROPLANE CLUB

REPORT for week ending June 2.—Flying time, 37 hrs. 40 mins.; instruction, 13 hrs. 50 mins.; soloists, 19 hrs. 45 mins.; passengers, 4 hrs. 5 mins.

Instruction (with Capt. Beck): Messrs. Batcock, Brown, Mrs. R. Blackburn, Messrs. Clayton, Daly, Miss Ellison, Messrs. Fitton, Gill, R. Lax, Lupton, Ostler, Reynolds, Roberts, Rowley, A. Senior, Shires, Sugden, Woolley.

Soloists: Messrs. D. Atcherley, A. Crowther, Dick, Reynolds, Woolley.

"A" Pilots: Messrs. R. Atcherley, Birch, Clayton, H. Crowther, Dawson, Ellison, Humphries, R. Lax, Lister, Thomson, Wood.

Passengers: 14.

Mr. Woolley, after many years' absence from flying, went solo last Sunday, and put up a creditable performance; and Mr. Reynolds, who only joined the club three weeks ago, went solo yesterday and put up a remarkably fine show.

We take pleasure in congratulating our two members, Mr. Stewart Dick and Miss Marjorie Crawford, on their engagement.

# FROM THE FLYING SCHOOLS

## The De Havilland Flying School, Stag Lane Aerodrome

REPORT for week ending June 3.—Total flying time, 72 hrs. 30 mins.; instruction, dual 22 hrs. 15 mins, solo 27 hrs. 5 mins.; other flying, 23 hrs. 10 mins.

Flying was curtailed to a great extent owing to the Whitsun holidays, when the school was closed down for several days.

Seven new "Moths" were tested, and the new De Havilland "Hound" with a "Jupiter" engine also made its initial flight successfully.

## Henderson Flying School, Brooklands Aerodrome.

REPORT for week ending May 31.—Total flying time, 61 hrs. 35 mins.

Dual (with Col. G. L. P. Henderson): Messrs. Hill, Robles, Moss, Dr. Forsyth, Matos. (With Capt. Davis): Miss Kidstone, Messrs. Moss, Oliver, Carlos, Robles, Crabtree, Payne, Burns, Murray-Philpott, Dr. Wall, Grierson, Oldmeadow, Allen. (With Capt. Davenport): Messrs. Brooks, Anderson.

Solo: Messrs. Oliver, Allen, Barclay, Hughes, Crabtree, Carlos, Hill, Grierson.

Messrs. Barclay and Patton-Bethune have passed all their tests for their Air Ministry "B" licence, and Mr. Allen has only got a cross-country flight to complete his tests.

200 passengers were carried at Hamble by Col. Henderson and Capt. Davenport and Mr. John Trantum, the world-famous parachutist, was dropped from one of our machines. Capt. Davies carried 243 passengers at Runnymede during the week-end.

New pupils are enlisting every day and enthusiasm is still at fever heat.

# INTERNATIONAL COMMISSION FOR WEATHER INFORMATION

SPEAKING at a luncheon given at the Savoy Hotel on May 31 by the Government to the members of the International Commission for Synoptic Weather Information, Sir Philip Sassoon, Under-Secretary of State for Air (who presided), said it was his pleasant duty to extend on behalf of His Majesty's Government to all the delegates a very hearty welcome. They were, he said, honoured to have gathered together so many distinguished representatives of the meteorological services of other countries.

The particular subject of the present deliberations, that of weather telegraphy, was one which had become of peculiar importance since the development of aviation. It was one which must inevitably grow in importance very rapidly, as the practice of flying and particularly of civilian and commercial flying became more general. Both meteorology and flying were still only in their infancy. In both departments of knowledge great progress might confidently be expected; already they had shown that they could help each other; but, while flying could assist meteorology by extending our knowledge of conditions in the upper air, the safety of flying and the speed and reliability of air communications were yet more dependent upon a complete and prompt system of weather information.

The importance of their work, therefore, was manifest. He need not dwell upon the difficulties of the task which they had undertaken. We in this country were so accustomed to the vagaries of the weather that it was only comparatively recently that we had begun to take weather forecasts seriously. For many years we had been used to regarding the weather reports in the daily papers as proper subjects for derision. If fine weather was predicted, we were especially careful to go out with our umbrellas; and a morning forecast of heavy rain was not seldom followed, in fact, by a day of brilliant sunshine.

All that, however, had changed. Today we studied the weather forecasts with a new interest and a growing faith. We had come to learn, with no small astonishment, that they were usually to be relied upon. Those of us who were connected officially or otherwise with aviation knew why this change had come about. We understood that weather forecasting was no longer guesswork based on insufficient data; but was a matter of quick information gathered from as wide an area of sea and land as possible. We were learning the real value of the work which they and those working with them were doing in all parts of the world.

The more widely we could extend the areas in which weather observations were regularly and scientifically obtained, and the more efficient and practical the steps taken to ensure speedy and accurate dissemination of the knowledge so procured, the more reliable would become our daily weather forecasts and the greater would be their value to aviators, agriculturalists, holiday-makers and many others.

It was their special business to devise methods by which the necessary information could be obtained and transmitted with yet greater speed and sureness, particularly from the wide ocean spaces which so greatly affect the weather conditions of Western Europe. Without going into the many technicalities which that task involved, he felt that he ought to congratulate

them upon the very substantial measure of success which had already been obtained in that direction.

Though so much has been done, he knew that we might reasonably expect a real advance from the deliberations of this present Conference. It was a very strong Conference, and it was with sincere pleasure that he saw so many gentlemen who were recognised all the world over as leaders in the science of meteorology in their respective countries.

He extended a very hearty welcome to Professor Van Everdingen, the President of the International Meteorological Committee and the Director of the Meteorological Service of Holland. Europe owed much to the work which Holland had done, under the guidance of Professor van Everdingen, for the advancement of our knowledge of the upper air, and to the regularity with which daily air temperatures, obtained by special meteorological aeroplane, were issued from Holland.

He was glad, also, to see there Dr. Hesselberg, the efficient Secretary of the International Meteorological Committee and the Director of the Meteorological Service of Norway. Meteorologists all the world over had derived much help from the work which he had done, or for which he was responsible, both in practical forecasting and in purely scientific investigation.

No student of meteorology could afford to neglect the observations which had been made into the conditions of the upper air by Dr. Hergesell, the Director of the German Upper Air Service and of the Observatory at Lindenberg, from which so much most valuable work had emanated. They welcomed him, too, with the utmost cordiality, and with the respect which was due to his great achievements.

It was particularly gratifying to have with them today the representatives of the Science of Meteorology on the other side of the Atlantic, Dr. Marvin, the Chief of the United States Weather Bureau, and Sir Frederick Stupart, the Director of the Meteorological Service of Canada. We in Great Britain got so much of our very worst weather from the other side of the Atlantic, that we welcomed the opportunity to ask them all about it! We realised, too, how vital to the development of trans-Atlantic flying was the closest liaison and co-operation between the Meteorological Services of North America and Europe.

Before he closed these few remarks he wished to say how deeply and sincerely they shared the anxiety which the Forecast Service of Italy must feel concerning the fate of their distinguished Chief, Professor Eredia, and his gallant companions, General Nobilite and his crew. They had faced great peril in the cause of science, and we prayed that they might yet be restored to the service of their country and of mankind.

Meteorology was a science which knew no national frontiers, and worked for the good, not of one nation alone, but of all nations and all peoples. Those who fell in the service of meteorology fell in the service of humanity, and were mourned alike by all nations. Those who worked together for the advancement of our knowledge of this new science deserved the gratitude and thanks of all the peoples of the earth.



# WILBUR WRIGHT MEMORIAL LECTURE

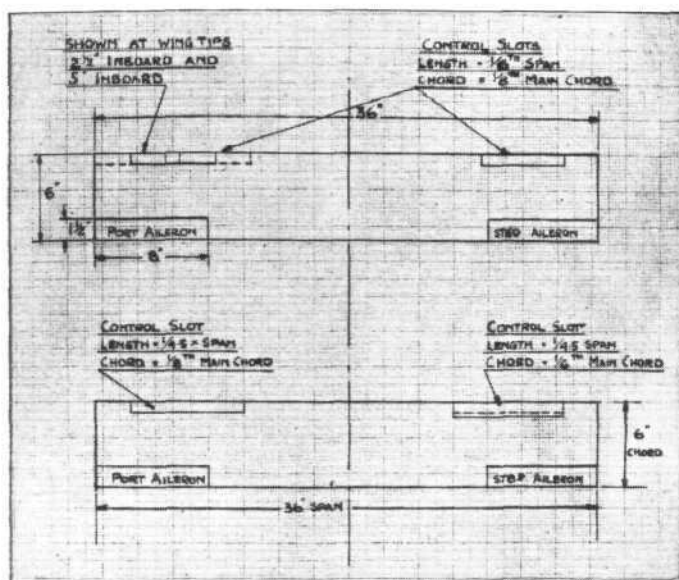
Delivered by F. HANDLEY PAGE, C.B.E., F.R.Ae.S.

THERE was a very large and very distinguished attendance at the lecture by Mr. Handley Page before the R.Ae.S. and I.Ae.E. on May 30, when the Sixteenth Wilbur Wright Memorial Lecture was read. Col. the Master of Sempill was in the chair, and before asking Mr. Handley Page to read his paper he presented to Mr. Page the Busk Memorial Prize for his paper on "Some Recent Experiments on Fluid Motion."

Mr. Handley Page's paper was one of the longest ever read before the society, and was illustrated by some 60 lantern slides. The subject chosen was the Handley Page slot, and in spite of the very highly technical nature of the

acting on the forward or auxiliary aerofoil, and with the arrangement of the links supporting it when the action is automatic, was very interesting and served to bring out the importance of very full information concerning the airflow over the nose of the section on which the slot is to be fitted. Lantern slides showing forward aerofoils not fitting quite snugly were very interesting in showing that the angle of opening can be varied considerably by "venting" the slot either in front or at the rear. If the "venting" is in front the opening is accelerated, and there will be a tendency for the slot to open too soon. By suitably "venting" the slot at the rear edge of the auxiliary aerofoil the opening can be retarded, and generally speaking this is an advantage in order to prevent the slot from opening during climb. Mr. Handley Page stated that it was not sufficient to ensure that in full-scale the slot opened at the correct angle, or to what appeared to be the full extent. Failure to obtain the full benefit from the automatic slots has in several cases been due to this.

The subject of where to place the automatic slots on a biplane has not, we think, hitherto been discussed in public, and consequently we propose to give the section of Mr. Handley Page's paper which dealt with that. Pointing out that in a biplane arrangement, particularly one with forward stagger or with a sesquiplane arrangement, the lower plane continues to lift at large angles and after the top plane has stalled, Mr. Handley Page said that slots needed to be fitted to the top plane only, and that as it was improbable that even in an involuntary stall the high angles of incidence would be reached at which the lower plane stalled, the use of the slot on the lower plane did not appear to be warranted in the ordinary type of biplane.

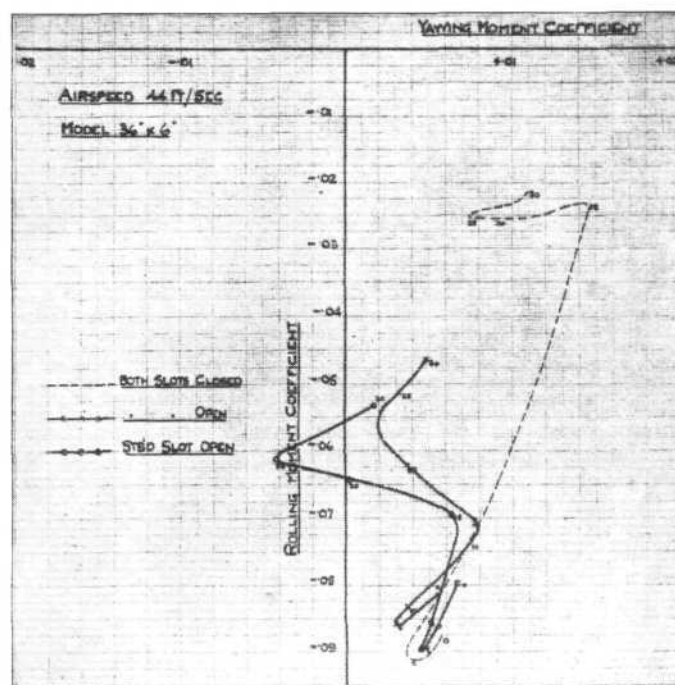


THE HANDLEY PAGE CONTROL SLOTS: Dimensions, etc., of the model, showing the various sizes and location of auxiliary aerofoil tested.

paper, Mr. Handley Page never for one moment lost the attention and interest of his audience. It is obviously impossible for us to attempt to give the paper in full, and the nature of the paper was such that a résumé would be of little value. Perhaps the best we can do will be to refer quite briefly to such passages and sections of the paper as appeared to contain references to the more recent developments, and which have not hitherto been described in print.

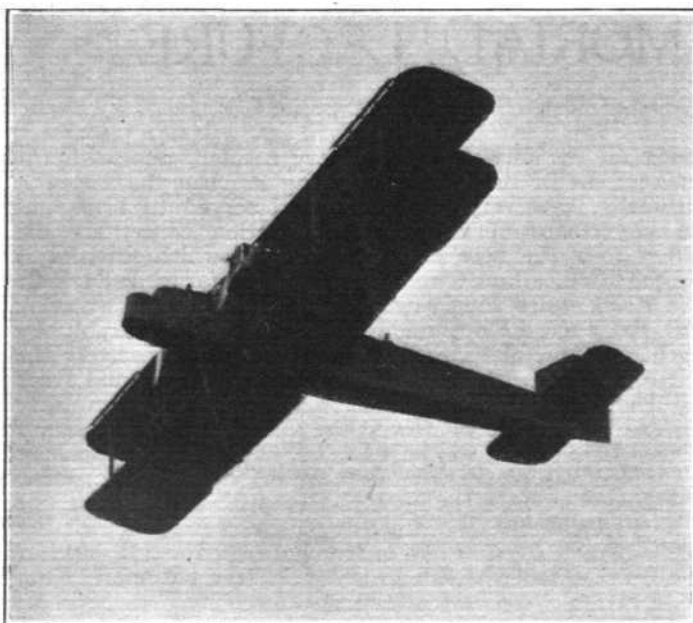
Pointing out that two courses lay open to the designer in the application of the slot, i.e., using it over the whole span of the wing to get extra lift, and over a portion only to get control at and beyond the stall, Mr. Handley Page exhibited a series of slides showing how the flow is altered by the introduction of the slot, and the quantitative increase in lift that can be obtained. It may be assumed that readers of *FLIGHT* are fairly familiar with the wing slotted over its whole span, and it may thus be of more interest to record here some of the sections of Mr. Handley Page's paper which dealt with the control slot. The lecturer pointed out that in a wing provided with leading edge slots near its tips, and having ailerons behind the slots, when the centre portion of the wing stalls, the tips remain unstalled, the righting moment is similar to that on an ordinary aeroplane flying under normal conditions, and the machine answers the controls as in normal flight. Such a machine behaves, in fact, exactly similar to one having wings with an excessive "wash-out." Mr. Handley Page did not here point out, as he might well have done, that whereas the wing tip control slots, and particularly the automatic slots, do not affect the efficiency of the wing, wing tips with a "wash-out" sufficient to give corresponding lateral stability at large angles would reduce both the maximum lift coefficient of the wing, and also the maximum L/D. He did, however, state that an aircraft with excessive "wash-out" would have a reduced performance due to the negative angles of the wing tips at full speed.

The section of the paper dealing with the resultant forces



THE HANDLEY PAGE CONTROL SLOTS: Yawing and rolling moments on wing of R.A.F. 28 Section, with auxiliary aerofoil in its most inboard position, i.e., 5 in. from the leading edge. The auxiliary aerofoil in this test was one-sixth of the span of the main wing, and had a chord one-eighth that of the main wing. The ailerons were in the maximum position, i.e., at  $-20^\circ$  and  $+20^\circ$ .

Having decided that the automatic slot should be fitted on the top plane only, in the case of a biplane, the next problem was what was the proper chord, span and position of the forward aerofoil in order to get the best results. A series of tests were carried out in the Handley Page wind tunnel on a model 36 ins. by 6 ins., of R.A.F. 28 section. For the purpose of the tests three sets of forward aerofoil were taken as follows: 1, forward aerofoil one-eighth of main plane chord and span one-sixth of main plane span;



["FLIGHT" Photograph  
**SLOTS AND THE SERVICE: A Handley Page  
"Hyderabad" in Flight. Note the automatic slots  
open at the upper wing tips.**

2, chord of forward aerofoil one-eighth of main chord, and span two-ninths of main plane span; 3, chord of forward aerofoil one-sixth of main chord, and span two-ninths of main plane span.

Measurements of lift coefficient gave little indication of the relative value of the different arrangements, but there were great differences in the values of rolling and yawing moments with the different aileron settings. With the first two arrangements, rolling and yawing moments were measured with the ailerons set at  $\pm 10^\circ$  and  $\pm 20^\circ$ , and these moments measured for three positions of the forward aerofoil; (a) at the wing tips, (b) with the outer edge 2.5 ins. from the wing tip, and (c) with the outer edge 5 ins. from the wing tip. In the case of the large-span, large-chord auxiliary aerofoil, the rolling and yawing moments were measured only at the midway position, i.e., with the outer edge 2.5 ins. from the wing tip. In each case measurements were taken (1) with slots closed, (2) with both slots open, and (3) with one slot open and one slot closed, the last case being that in which a controlled type of forward aerofoil is used. It was found that as the forward aerofoil was moved inward from the tip so did the rolling and yawing moments improve from a control point of view, and almost as good results were obtained as from the mechanically-operated auto-slot, where one slot was closed by the upward movement of the aileron. This was particularly the case with the flaps up and down  $20^\circ$ , and with the auxiliary aerofoil in the farthest inboard position.

The main feature of the tests with both slots open was the improvement which resulted from fitting the forward slot inboard from the main wing tip. In this position there was a remarkable increase in rolling moment as compared with the unslotted section.

Obviously, Mr. Handley Page said, the best improvement

in control would in all cases be obtained with the arrangement in which the slot was closed, or its effect neutralised, on one side of the wings by the upward movement of the aileron. Such an arrangement gave at large angles of incidence a yawing moment of the right sign.

An arrangement for inter-linking the slot and aileron was shown, but the lecturer pointed out that many variations were possible, notably by the movement of the link hinge point so that a closing torque was brought into action on the forward aerofoil.

Admitting that objection might be raised to the extra complication of interconnecting slot and aileron, Mr. Handley Page described and illustrated a method of effecting the same purpose by the use of an "interceptor" or "spoiler," which is a small strip placed on the upper surface of the aerofoil, and so hinged that it can lie flat against the wing or be raised at right angles to it. The action of this "interceptor" is to cause burbling, in the same manner as if the slot was closed. One of the slides illustrated the rolling and yawing moments on R.A.F. 28 section for: (a) both wing-tip slots open without interceptor; (b) both wing-tip slots open, with an "interceptor" fitted on one side; and (c) one wing-tip slot closed and no "interceptor" fitted. The moments were measured for the ailerons at  $10^\circ$  and  $20^\circ$ . With the "interceptor" there was a great improvement in control over the case of both slots open, and at the smaller angles (up to  $20^\circ$  incidence) over the case of one slot closed. Beyond this angle the rolling moments were not quite as large as with one slot closed. A similar arrangement was tested for a complete model biplane, and tested in full-scale free flight the model results were fully borne out. The control was no different in "feel" from the ordinary aileron, and no heavier to operate.

In all the tests described by Mr. Handley Page a forward or auxiliary aerofoil forming part of the original wing section was used. It was somewhat easier in construction to fit an additional forward aerofoil on top of the normal section, much in the way in which a plaster is fitted. Such a variation had been developed by Mr. Bruce, of the Westland Company, and had shown itself as effective as the type illustrated and tested by Handley Page.

Summarising the main points of his lecture on the slot, Mr. Handley Page said: (1) With thick wing sections an increase in lift coefficient can be obtained by the use of the slot, equal in magnitude to that obtained with thin wings.

(2) As the use of the slot for control purposes is dependent on the lift increase obtained, a similar result in stalled flight can be obtained with both thick and thin sections.

(3) Where the aerofoil is used for a portion of the span only, the best result for control is obtained when the auxiliary aerofoil is fitted in an intermediate position between the tip and the centre of the wing.

(4) With a correctly-designed and positioned auxiliary aerofoil opening and closing automatically, a very good control at and beyond the stall can be obtained without the added complication of control by the forward aerofoil.

(5) If increased control is required at and beyond the stall, particularly at very high angles of incidence, the controlled slot or the "interceptor" should be used.

It is the custom of the Royal Aeronautical Society, with which is incorporated the Institution of Aeronautical Engineers, that after a Wilbur Wright Memorial Lecture there is no discussion. Major Wimperis proposed a vote of thanks to the lecturer, and was seconded by Lieut.-Col. Moore Brabazon.

### The S.M.A.E. Journal

THE May issue of the S.M.A.E. Journal, the official organ of the Society of Model Aeronautical Engineers, is to hand, and it is quite an interesting number. Besides containing a diary of events, sundry Society notices, rules for the various forthcoming competitions, etc., it also gives the lecture on "Airscrews" which was read before the Society on March 23 last. This lecture is very instructive and should provide some useful data for model constructors. We are not certain whether the S.M.A.E. Journal is available to non-members, but no doubt a copy (price 6d.) would willingly be sent to any of our readers interested on application to the Hon. Secretary, S.M.A.E., 23, Mayfair Avenue, Ilford.

### An Air Novel

As flying is rapidly becoming a fashion, there should be a wide interest in novels with an aviation appeal. Sampson Low, Marston & Co., Ltd., have published a novel by Faith Baldwin entitled "Departing Wings." (7s. 6d.) The

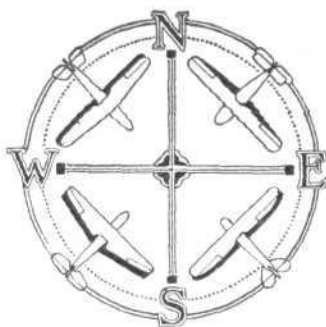
flying interest is slight, being practically confined to the fact that the hero is an American service pilot; and he does not remain that very long. There is very little flying actually described, and although the authoress is not intentionally funny, we think that airmen readers will find her amusing when she treads the air. But as a novel it is very readable, if conventional. The scenes are laid in America, and the characters are Americans. Broadly outlined the story tells you that the flying hero fell in love, married, met trouble that never matured, and then lived happy ever after. After all, if that is what happened to everyone life would not be intolerable.

### Australian Aerial Derby Mishap

DURING a race in the Victorian Aerial Derby at Essendon on May 27, Flight-Lieut. A. G. Wells, piloting a D.H.9, collided with a high-tension electric cable. The wings were torn off and the machine crashed to the ground, fortunately clear of the cables. The pilot was seriously injured.



# AIRISMS FROM THE



# FOUR WINDS

## Great Flying-Boat Cruise

THE four R.A.F. Supermarine-Napier "Southampton" flying-boats engaged on the Far East and Australian cruise from England, reached Koepang in the Dutch East Indies, on May 30. On June 1, they flew to Broome in Western Australia. The start was made at 5.45 a.m. in a following wind, and the first point in Australia sighted was the Cape Leveque lighthouse, at 11.30 a.m. At 12.40 p.m., a landing was made at Broome amidst a pearling fleet. Wing-Commander Wackett, of the Australian Air Force, flew out to escort, but he missed the flying-boats and returned some time later. The flight was resumed on June 3, with Wing-Commander Wackett escorting on the Widgeon-Amphibian.

## Italian Air Force Cruise

THE massed air fleet of Italian Air Force seaplanes, under Gen. de Pinedo, engaged on the Mediterranean cruise, left Barcelona on June 1, and reached Marseilles later, a perfect landing being made at the Etang de Berre Aerodrome. The cruise was concluded on June 2 with the arrival back at Orbetello.

## Spanish Long Distance Attempt

THE two Spanish airmen, Captains Jimenez and Iglesias, who left Seville on May 29, in an attempt to reach Karachi non-stop in their Breguet, the "Jesus of Great Power," were obliged to make a forced landing through engine trouble between the Tigris and Euphrates in a remote spot about 200 miles south of Baghdad, and 40 miles from the nearest town. Heavy dust storms impeded the flight beyond Aleppo and two hours after passing Baghdad at 6,000 ft., the engine failed. Both airmen will probably be the guests of the R.A.F. until they return to Spain or resume their flight to India. They beat the Spanish record for long-distance flight by 550 miles, and were in the air 54 hours.

## French Non-Stop to India Flight

THE French airmen, Capt. Arrachart and Capt. Rignot, left Le Bourget on June 3 on a Breguet biplane fitted with a Renault 550 h.p. engine with the hopes of reaching India non-stop or at least beating the long distance record.

## American Girl's Attempt upon Atlantic

A 3-ENGINE Fokker monoplane, called Friendship, left Boston for Trepassey, Newfoundland, on June 3 for the first stage of a flight across the Atlantic to England. The flight has been organised by Miss Amelia Earhart, whose pilot is Mr. Wilmer Stultz, and mechanic, Mr. Louis Gordon. Owing

to fog a landing was necessary at Halifax, Nova Scotia, but the following day the flight was resumed and Trepassey reached. One of the reported backers of the expedition is the New York publisher, Mr. G. Putnam, and another is Mrs. Guest, the wife of the Hon. F. E. Guest. Wireless apparatus is being carried.

## Another Atlantic Aspirant

MISS THEA RASCHE, the German woman pilot, proposes to leave New York after June 10 in an endeavour to fly to Berlin. Her machine will be a Bellanca monoplane with a Wright "Whirlwind" engine and the course will be via Newfoundland, Ireland, England and Holland. Her companion will be either an unnamed American pilot or a German airman, Ulric Koenemann. Apparently business men have subscribed £10,000 towards the flight and insurance companies have insured Miss Rasche's life for £10,000. No names are mentioned in order to avert criticism for encouraging a woman on such an expedition.

## Arctic Explorers in Berlin

CAPT. SIR G. WILKINS, the Australian airman who recently crossed the Arctic region near the North Pole with his companion, Lieut. Eielson, reached Berlin by air from Copenhagen on May 30. They were officially received by Herr Zweigerg, Permanent Under-Secretary of the Ministry of the Interior, and welcome was also given by the British and American Ambassadors.

## Negotiations with Persia

MAJOR WOODS HUMPHREY, General Manager of Imperial Airways, Ltd., left Basra, on June 1, for Teheran, by special aeroplane to discuss with the Persian Government the details of the proposed continuation of the Imperial air route from Basra to Karachi.

## Twenty Years Ago!

Extract from "The Auto." (Precursor of "Flight"), June 6, 1908.

"The High Jump Prize.—As a preliminary trial in training for the 'high jump' prize, Mr. Farman succeeded on Saturday last in clearing a row of ballonettes floating 10 metres above the ground. The approximate height of his flight is reported as being 12 metres, which is just under half that required to win the prize, which will be awarded to the first who clears 25 metres."



**A CZECHOSLOVAK VISITOR :** Piloted by Captain Hamsik, the Avia B.H.29 is expected at Croydon aerodrome during the next few days. The machine is a school type and is said to have exceptionally good controllability, even in stalled flight. The engine is a Walter.



# THE ROYAL AIR FORCE

*London Gazette, May 29, 1928.*  
The King has been graciously pleased to approve the appointment of the Reverend R. E. V. Hanson, O.B.E., M.A., Chaplain-in-Chief, Royal Air Force, to be an Honorary Chaplain to his Majesty (May 19).

## General Duties Branch

Air Commodore E. A. D. Masterman, C.B., C.M.G., C.B.E., A.F.C., is placed on half-pay list, scale A (June 1); Flying Officer A. M. Webster is placed on retired list on account of ill-health (May 30); Flying Officer F. A. Pumphrey, D.C.M., is transferred to Reserve, Class C (May 4) (substituted for *Gazette* May 8); Flying Officer R. H. Giles is transferred to Reserve, Class C (May 14).

## Medical Branch

The following Flying Officers are promoted to rank of Flight Lieutenant.—P. H. Perkins (June 1); S. F. Heatley, M.B., B.A. (June 2).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

*Flight Lieutenants:* H. C. Irwin, A.F.C., to Royal Airship Works, Cardington, 1.6.28. H. E. P. Wigglesworth, D.S.C., and C. L. Falconer, to R.A.F. Depot, Uxbridge, 5.5.28.

*Flying Officers:* D. L. G. Bitt, to R.A.F. Depot, Uxbridge, 5.5.28. A. S. Lewis, to R.A.F. Station, Hendon, 13.5.28. J. S. Blomfield, to R.A.F. Depot, Uxbridge, 28.4.28. C. G. C. Woledge, to No. 1 Flying Training Sch., Netheravon, 22.5.28.

### Stores Branch

*Wing Commander* R. W. Thomas, O.B.E., to No. 3 Stores Depot, Milton, to Command, 23.4.28.

*Flying Officers:* R. N. Hesketh and B. G. Pool, to H.Q., Cranwell, 28.4.28.

*Pilot Officers:* G. Matthews, E. N. A. Crowe-Browne, M. J. Scott, L. F. Oldridge, A. W. Rule, J. S. French, E. J. H. Starling, P. Dennehy, J. W.

## CORRESPONDENCE STEEL PROPELLERS

[2171] To the technical mind the remarks applying to airscrews on p. 128 of "The Art of Flying" should, from the context, be known to apply to propellers which are fitted to small and medium-sized aeroplanes equipped with engines which produce power at high revolutions, thus creating a high propeller tip speed. These propellers are necessarily comparatively small, and today run to about 10 to 11 ft. maximum diameter. Nevertheless, conditions do obtain where propellers of this type are not superior to other existing types, and, in writing this paragraph, this fact was inadvertently not brought out; in the non-technical mind an impression of inferiority might thus be created against the steel propeller. No such intention was sought by the author. Actually, steel propellers are to be fitted to H.M. Airship R.101, in which case the large diameter of these propellers enables the hollow steel blade to be made lighter than an equivalent solid Duralumin blade. Further, two of the four Supermarine Southampton flying-boats, one of which is illustrated in "The Art of Flying," which are flying on an Empire cruise, are fitted with steel propellers, which have given excellent service.

The writer regrets any suggestion of unfairness against the steel propeller which might be imputed to his book, and offers apologies to the manufacturers of Leitner-Watts steel-bladed propellers, and any other manufacturers of steel airscrews whose products enter a field of airscrew requirements which are today largely complementary to that of the duralumin propeller, and which, with future development, will compete with them in the smaller diameter airscrew.

The following errata sheet has been added to "The Art of Flying," against p. 128:—  
Page 128, Lines 14, 15, 16, 17.

This sentence applies solely to propellers fitted to small and medium-sized aeroplanes equipped with engines which produce power at high revolutions, thus creating a high propeller tip speed. Steel and Duralumin propellers are largely complementary, overlapping occurring at diameters between 9 and 10 ft. In the larger diameters the hollow steel blade gains the advantage of lighter weight when well designed. Two of the four Southampton flying-boats, flying on the Empire cruise, are equipped with steel propellers which have given excellent service, and manufacturers of this type of airscrew are designing airscrews for H.M. airship R.101, and are now in process of developing propellers for light aeroplanes to compete with the small-diameter Duralumin airscrew.

I shall be glad if you will give this letter space in your columns.

NORMAN MACMILLAN

Iver, Bucks. June 4, 1928.

*Chaplain's Branch*  
The Rev. A. McHardy, M.C., M.A., is granted the relative rank of Group Capt. on appointment as a Staff Chaplain (May 30); the Rev. W. Moffat relinquishes his short service commn. on account of ill-health (May 30).

## RESERVE OF AIR FORCE OFFICERS

### General Duties Branch

Flying Officer J. H. C. Harrold is transferred from Class B to Class C. (May 26); Flying Officer A. J. R. Adam relinquishes his commn. on completion of service (Dec. 2, 1927). The commissions of the following Pilot Officers on probation are terminated on cessation of duty:—E. C. L. Easan (May 5), S. A. Adams (May 2), M. H. Richardson (May 12).

### Medical Branch

Flight-Lieut. F. K. Wilson, M.B., is transferred from Class D ii to Class D i (May 26).

Hunt, P. V. Edwards, H. E. Freeston, J. E. Reynolds, and F. G. Lee, to H.Q., Cranwell, on appointment to Permanent Comms. (on probation), 28.4.28.

*Flying Officers:* L. T. Sanderson, D.S.M. and G. C. Wilson, to R.A.F. Depot, Uxbridge, 12.4.28. H. O. Fellowes, to Aircraft Depot, Iraq, 15.4.28. E. C. Farman, to No. 111 Sqdn., Sutton's Farm, 1.4.28.

### Medical Branch

*Flight Lieutenants:* P. D. Baring, M.B., to H.Q., Middle East, 9.5.28. A. F. Cook, to No. 2 Armoured Car Coy., Middle East, 1.5.28.

### Chaplain's Branch

Revd. R. M. Banks-Jones, to R.A.F. Depot, Uxbridge, 31.3.28.  
Revd. G. L. Robinson, D.S.O., to Record Office, Ruislip, 12.4.28.  
Revd. A. McHardy, M.C., M.A., to H.Q., Inland Area, Stanmore, 30.5.28.

## NAVAL APPOINTMENT

The following appointment was made by the Admiralty on May 30:—  
Lieut. (Flying Officer, R.A.F.)—H. D. Smallwood, to *Furious*, 3.5.28.

## R.A.E.S. AND INST.AE.E.

### Official Notice.

*Lecture by Sir George H. Wilkins.*—Captain Sir George H. Wilkins will lecture before the Royal Aeronautical Society on Thursday, June 14, at 6.30 p.m. at the Royal Society of Arts, 18, John Street, Adelphi, W.C. 2.

In the course of his lecture he will deal in detail with the difficulties of flying over the Arctic, and will outline the kind of machines which are necessary, and all the modifications he found were essential for the conditions he had to face.

Advance copies of the paper will be available, price 6d. each, and admission to the hall will be by ticket only, available from Captain J. Lawrence Pritchard, Secretary, Royal Aeronautical Society.

*Banquet to Mr. A. V. Roe.*—Those who have tickets for the Banquet to Mr. A. V. Roe at the Savoy on June 8 are requested to remember that the time is 7.30 for 8, and should be there as soon as possible. All the available tickets have now been sold, and somewhere over 400 people will assemble to honour Mr. Roe.

J. LAWRENCE PRITCHARD, Secretary.

## SIDEWIND

It is interesting to learn that the officers of the R.A.F. are being exceptionally well catered for by the well-known firm of Burch's, who are making R.A.F. uniforms strictly to Air Ministry patterns, and in spite of the rigid conditions laid down by the O.Cs. of the principal depots, they are still first in the field for accuracy and details and cannot be excelled for value in R.A.F. kit. They have made a profound study of economising these outfits ever since the formation of the R.F.C., and cannot be surpassed for efficiency in workmanship. They have already achieved a wonderful success by supplying the very best materials at most moderate prices, and we should not hesitate to recommend officers of all ranks, including new commissioned officers, to pay them a visit.

## FLIGHT,

*The Aircraft Engineer and Airships*

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